4-1

EXPERIMENT STATION
JAN 2 1892
UNIVERSITY OF ILLINOIS

The AMERICAN ANALYST.

VOLUME VII.

1891.

REMOTE STORAGE

THE AMERICAN ANALYST.

INDEX OF CONTENTS OF VOL. VII.

January to December, 1891.

A Back Yard Fantasy 257
A Blinding Habit 77
Absinthe 570
Acoustic Thermometer 423
Aerial Travel 88
A Day's Work 327
ADULTERATED Essences 330
Food 196
ADULTERATION in Massachusetts 315
in New Hampshire 340
of Food 146
Aesthetics, Hygiene 233
African Currency 111
Agate and Onyx 39
A Gila Monster 523
AIR 269, 303
Navigation 147
Alaskan Explorers 499
Alchemy 378
Ambergris 63
AMERICAN Athletics 234
Citizenship 556
Contrasts 122
Names 294
Ammonia 160
An Adulteration Advocate 473
An American Duchess 376
Angel Food 389
A Nation's Needs 77
ANCIENT Faith Cure 244
Vertebrates 173
An Ice Cream Factory 386
ANIMAL Economy 184
Mineral and Plant 148
Animals' Speech 603
Annihilating Space 627
Antediluvian Monsters 362
A Parisian Dinner 353
Aphasia 124
APPLIED Hypnotism 590
Science 401
Arsenic 425
Art and Critics 52
ARTIFICIAL Coffee 280, 579
Flowers 160
Foods 220
Pearls 422
ART in Nature 182
of Wood Engraving 185
Aryan Art 267
A Smart Business Woman 134
A Spook Census 50
Asthma and Goose Feathers 499
ASTRONOMICAL Conjectures 533
Progress 316
Autumn Leaves 531, 554

Bacteria 219
Balloons 581
Barometric Plants 89
Bathing in Paris 533
Baths and Bathing 170
Beauty and Taste 304
BEEF Advancing 232
Extract 41
Tea 53
Bellamy's Vision 184, 197
Beneficent Bacteria 326
BENEFICIAL Foods 570
Habits 437
Bicycle Science 207
Black Coffee 77
Bodily Solicitude 328
Books 547
Botanic Freaks 410
Boys and Bones 402
Bread Chemistry 353
Breathing Plants 566
Bridgman, Laura 29
Bright Stories 412, 436, 448, 460, 472, 484, 496, 508, 520, 532, 544, 556, 568, 580, 592, 616

BRITISH Domestics 206
Waste Paper 314
Bubbles and Foam 555
Buddhism 28, 400
Butter, Vegetable 40

California Wine 3
Cannibal Plants iv
Carats 280
Care of Clothing 257
Caring for the Complexion 232
Carnivorous Plants 530
Casting a Statue 330
Catering Science 86
Character in Names 458
Cheap Candy 389
Cheapness Not the True End 208
Cheap Soaps 422
Chemistry of the Sun 172
Chewing Gum 197
CHICAGO Exposition 523
Exposition Buildings 510
CHINESE Market Gardens 584
Scholars 365
Wax 603
Chronometers 568
Cider without Apples 531
CITY Flowers 292
Noises 329
Clean Books 99
Cleaning City Streets 149
Cold Winter Signs 607
Columbian Exposition 582
Comeliness and Diet 28
Comely and Plump 338
Common Sense in Winter 4
Communicating with Mars 364
Compressed Drugs 559
Condensed Milk 29
Congress and Pure Food 110
Contemporary Ghosts 63
Contingencies of Old Age 100
Conversation Classes 147
Cooking Education 438
Corks 570
Cosmetics 509
Crystalline Glass 174
Curious Inventions 545
Currants or Corinths? 413
Curious Patents 196

Dædalus in Science 390
Darwin Criticised 483
Death Valley 290
Deceptive Gifts 615
Degeneration and Evolution 470
Detective Chemistry 219
Dictionary Lore 294
Diners and Dining 209
Dinner Talk 62
DINING and Wining 194
in Norway 508
Disappearing Types 2
Disinfectants 162
Do Cats Spread Disease? 27
Domestic Dietetics 5, 17, 29, 41, 53, 65, 77, 89, 101, 113, 124, 137, 149, 161, 173, 185, 197, 206, 221, 233, 246, 257, 269, 281, 293, 305, 318, 328, 341, 353, 365, 377, 389, 401, 413, 427, 438, 449, 461, 475, 485, 499, 509, 521, 535, 545, 557, 569, 581, 594, 605, 617, 626
Dreams and Sleep 578
Dress 614

Early Standards 4
Earth Germs 351
Earth's Last Day 231
EATING and Living 173
with Moderation 26
Eclipses in History 375

Editorials 1, 13, 25, 37, 49, 61, 73, 85, 97, 109, 121, 133, 145, 157, 169, 181, 193, 205, 217, 229, 241, 253, 265, 277, 289, 301, 313, 325, 337, 349, 361, 373, 385, 397, 409, 421, 433, 445, 457, 469, 481, 493, 505, 517, 529, 541, 553, 565, 577, 589, 601, 613, 625
ELECTRICAL Equivalents 498
Heating 183
Power 340
Progress 400
Quackery 305
Electric Clock 595
ELECTRICITY and Life 458
What is? 374
Electric Service 123
Electrolysis 594
Energy 234
Escanaba 222
EUROPEAN Entertainments 258
Salads 542
Soap 557
EVOLUTION 427
of Flowers 604
Explosion and Rain 626
Eyesight, Risks to 16

Falling Stars 402
Fashionable Jewels 270
Ferments and Anti-Ferments 578
FIRE 65
Crackers 314
Fish Farms 266
Florida Phosphates 374
FOOD Adulterations 125
and Digestion 268
and Sleep 483
Fancies 412
FREE Lunch 543
Lunch.—(Republished by request) 590
Freezing a Failure 626
French Adulterations 136
Fruit Diet 342
Fulminates 52

Genesis of the Elements 195
GERMAN Cookery 230, 388
Electricians 245
Ghosts and Visions 474
Giant Sloths 482
Glass Eyes 40
Glycerine 15
Gold and Silver 328
Grape Juice 243
Gravitation 281
Greenbacks, How Made 5
Green Tea 89
Grocers in Tinsel 158
Gun Cotton 27, 88
Gutta Percha 423

Hair Springs 519
Hats and Hat Making 218
Hay Exchange Official Bulletin 8, 20, 32, 44, 56, 68, 80, 92, 104, 116, 128, 140, 152, 164, 176, 188, 200, 212.
Headache 111
Healthful Homes 39
Heat 255
HISTORIC Fires 198
Heat 435
Watches 494
Holiday Toys 14
Home Life in Spain 148
Hot-house Poison 78
Household Servants 247
How We Catch Cold 52
Human Effort 604
Hypnotism 51

ICE 304
In the Tropics 51
Imitation Perfumes 459
Imperial Dinners 293
Industrial Education 315
Insomnia 450, 471
Intellect and Diet 342
Interior of the Earth 113
Interplanetary Communication 507
Italian Cookery 352

Jonathan's Daughters 518

Kirschwasser 41

Labor and Humanity 232
Lager Beer 533
La Manhattienne 414
Land Navigation 292
Latin in Modern Science 64
Legal Hospitalities 42
Length, Standard of 99
Lenses 521
Leucocytes 363
Life and Its Conditions 316
Life's Romance 389
Light 495
Lightning 434
Liqueurs 462
Liquid Fuel 270
Liquid Globules 222
Lunar Law 424
Lung Gymnastics 269

Malaria 583
Making Rain 583
Map Mounting 209
Mascots and Talismen 270
Men, Birds and Kites 256
MENTAL Effort 270
Habit 50
Menu Cards 76
Menus 554
Meteorites 340
Metheglin and Mead 280
Metropolitan Millionaires 75
Microbes and Longevity 16
Mind Reading 376
Minute Organisms 291
Modern Light 434
Modern Surgery 74
Monkey Talk 364
Moths 302

Names for Definition 199
National Contrasts 341
Nature's Remedy 486
Nerves and Narcotics 318
New Air Ship 494
New Meat Wanted 546
Newspaper Pictures 101
New York Homes 474
Nickel and Slot 246
Nutrition 149

Observation 54
Ocean Mysteries 221
OLD Age 555
Papers 28
Probabilities 593
Time Delicacies 498
Oleomargarine in Russia 507
Olive Oil Frauds 281
Olives 30
Oil and Lead 38
On the Scent 424
Opals 112
Oriental Cookery 449

Paint from Cinders 26
Patres Patriæ 350
Phantom Parties 521
Phosphorescence 450
PIE, a Champion for 377
for Lunch 53
Piteous Plea 208
Planked Shad 246

A.S. 2668

Platinum 40
Poisons 278
Pomades 161
Pond Revelations 399
Power of Water 172
Progressive Repose 267
Pure Food 302
Food in Europe 171
Purity and Imposition 112

Quick Cookery 509

Rain Compellers 398
to Order 506
Rational Therapeutics 146
Retort Scientific 235
Right and Left Handed 605
Roman Dishes 136
Ropes 38
Russian Cookery 566
Rust 259

Sauces and Digestion 329
Schizomycetes 425
Sea Going for Invalids 6
Silver 4
Sleep 74
Smokeless Battles 64
Soft Soap and Hard 306
Speed of Electricity 339
Sponges 521
Stale Bread 314
Stellar Diamonds 462
Storm Classification 451
Street Boilers 41
Subterranean Fires 271
Sulphur 591
Superstition 317
Superstitions 182

Table Arrangement 569
Contrasts 485
Talking of the Future 447
Tea, Ideal 378
Theine and Tannin 411
Telescopes 458
That Other Fellow 172
The Chair-Maker 426
Columbian Exposition 534, 558, 606, 618
Cork Oak 435
Grip 495
Matrimony Business 282
Porcupine Plant 3
Primeval Horse 474
Problem of the Future 160
Shekel 17
Stage World 244
Starfish 306
Sun a Magnet 446
Weaker Sex 470
World of Water 78
World's Temperature 438
Thermometers 326
Those Good Old Days 471
Thought and Language 365
Time at Night 607
Tons of Currency 279
Tornadoes 542
Training for the Throne 351
Trees and Moisture 387
Tropical Storms 531
Truffles 546

Unheard Sounds 482
Unselfishness 268
Utilizing Waste 242

Vacation Preparations 387
Vanishing Luxuries 98
Vaseline 159
Vegetarianism 354

Water and Fire 137
Gas 471
What is Said About Us 99
Makes Beauty? 171
Which is Which? 135
Wholesome Exercise 75
Wine Destroyers 222
Women as Inventors 220
Women's Clubs 185
Woman's Sphere 602
Women's Wages 65
Work 76, 89, 113, 242, 254, 411
Woman's World 186

Subscriptions $1 per year. Now is the time to subscribe.

CANNIBAL PLANTS.

AN IMPROBABLE STORY OF THE BORDERLAND BETWEEN VEGETABLE AND ANIMAL LIFE.

Some years ago a striking story was published in France describing a wonderful flesh-eating plant discovered by a great botanist. If we remember rightly the story recounted how a a certain collector discovered a plant of the flytrap species of so gigantic a size that it could consume huge masses of raw meat. Just as the fly-catching plant snaps up a fly and draws nutriment from the fly's dead body, says a writer in the London *Spectator*, so this one fed itself on the legs of mutton and sirloins of beef which were thrown into its ravenous maw. The botanist in the story, for some reason, possibly fear of having his plant destroyed as dangerous to public safety, keeps the existence of the plant a secret and preserves it in a locked-up conservatory. His wife, however, who is made miserable by his absorption of mind—he thinks of nothing but how to feed and improve his wonderful and fascinating plant—determines to follow him. This she does, accompanied by an old school friend of the husband. When the pair reach the inner conservatory they see, to their horror, the infatuated botanist tossing bleeding joints of raw meat into the huge jaws of a giant flytrap. They are at first petrified with horror. At last, however, the wife throws herself into the arms of her husband and implores him to give up dwelling with the horrible carnivorous monstrosity which he has discovered and reared. Unfortunately, however, the wife in appealing to her husband goes too close to the plant. Its huge tentacles surround her and then proceed to drag her in and the two stupefied men see the plant begin to devour its victim. Fortunately, however, the friend catches sight of an ax lying near and seizing this he strikes at the root of the plant. A few frenzied blows do the necessary work, and the flesh-eating plant tumbles to the ground and releases from its clutches the terrified woman. The botanist, however, cannot survive his most cherished discovery, and with the exclamation. "You have killed my plant!" he falls back dead. The story is good enough as a story, but if we are to believe an article said in the *Review of Reviews* to be taken from *Lucifer*—it is only another instance of fiction being prophetic and anticipating scientific discovery. According to the article quoted by Mr. Stead there has been discovered in Nicaragua a flesh-eating, or rather man-eating, plant, which for horror is quite the equal of the novelist's imagination. This plant is found, it is asserted, in Nicaragua, and is called by the natives "the devil's snare." In form it is a kind of vegetable octopus, or devil fish, and is able to drain the blood of any living thing which comes within its clutches. We give the story with all reserve, but it must be admitted to be circumstantial enough in all its details to be possible. It appears that Mr. Dunstan, a naturalist, has lately returned from Central America, where he spent two years in the study of the plants and animals of those regions. In one of the swamps which surround the great Nicaragua Lake he discovered the singular growth of which we are writing. "He was engaged in hunting for botanical and entomological specimens when he heard his dog cry out, as if in agony, from a distance. Running to the spot whence the animal's cries came, Mr. Dunstan found him enveloped in a perfect network of what seemed to be a fine, rope-like tissue of roots and fibers. "The plant, or vine, seemed composed entirely of bare, interlacing stems, resembling, more than anything else, the branches of the weeping willow denuded of its foliage, but of a dark, nearly black hue, and covered with a thick, viscid gum that exuded from the pores." Drawing his knife, Mr. Dunstan attempted to cut the poor beast free; but it was with the very greatest difficulty that he managed to sever the fleshy, muscular fibers of the plant. When the dog was extricated from the coils of the plant Mr. Dunstan saw, to his horror and amazement that the dog's body was bloodstained, "while the skin appeared to have been actually sucked or puckered in spots," and the animal staggered as if from exhaustion. "In cutting the vine the twigs curled like living, sinuous fingers about Mr. Dunstan's hand, and it required no slight force to free the member from its clinging grasp, which left the flesh red and blistered. The gum exuding from the vine was of a grayish-dark tinge, remarkably adhesive, and of a disagreeable animal odor, powerful and nauseating to inhale." The natives, we are told, showed the greatest horror of the plant, which, as we have noted above, they call the "devil's snare," and they recounted to the naturalist many stories of its death-dealing powers. The neighborhood inhabited by that Amazonian tribe, who, by the use of some secret can reduce a human corpse to a tenth of its original size and so produce a perfectly proportioned miniature mummy of the dead man, would have been a good locality in which to "place" the tale of the cannibal plant. Again, Nicaragua is within the tropics and plant life there is therefore specially gross and vigorous. Besides, there is no inherent impossibility in the idea of a flesh-eating plant. It is merely a question as to whether evolution has or has not happened to develop the fly-eating plant on a sufficiently large enough scale to do what is related of the vampire plant. No one who has seen the ugly snap which that tiny vegetable crab, Venus' fly-trap, gives when the hairs inside its mouth are tickled by the human finger in the way that a fly would tickle them by walking can doubt for a moment that the development of a plant capable of eating or sucking the blood of a man is only a matter of degree. Even in England there are plants which act on a small scale exactly the part asserted to be played by the vampire vine—for example, Lathræa squamaria, the toothwort, "a pale chlorophyl-less parasite found in British woods." There are known to be several hundred dicotyledons which, in some way or other, catch and live on animal food. From such a basis the evolution of a giant and man-eating dicotyledon is within the bounds of possibility. We cannot help hoping very much that the story of the vampire vine will turn out to be true, for if it does the botanists will be able to try some curious experiments as to how these vegetables which are half animals, digest, and whether their movements can properly be regarded as muscular movements. It is true that Darwin administered extremely homeopathic doses (.000095 of a milligramme) of nitrate of ammonia to a sundew and found the plant responded to the drug exhibited, but it would be far easier to conduct experiments on a larger plant. Even as it is we know that the insect-eating plants secrete not only an acid, but a "peptonizing ferment" for the purposes of digestion. They also feed, like animals, "on substances at a high chemical level." More than 150 years ago Linnæus noted that the Lapps "used the butterwort for curdling milk, a property due to a rennet-like ferment which the plant has in addition to the digestive or peptic." Again, we are told that Dr. Burdon Sanderson has "detected electric currents similar to those observed in the neuro-muscular activity of animals." The borderland between animal and plant life occupied by the insect-eaters is, indeed, one of the most curious and interesting fields of biological study; and if a plant as large as the vampire vine could be obtained to experiment with discoveries of enormous importance to science might very likely be made. The vampire vine would doubtless stand a grain of calomel after a heavy meat meal without damage or annoyance.

Extensive Territory.—The Dominion of Canada has an area of 3,382,000 square miles, and comprises one-sixteenth of the land surface of the globe.

Contrary Indications.—A flock of wild geese flew north this morning, indicating warm weather, and another flew south, indicating cold weather.—*Atchison Globe.*

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 1. NEW YORK, THURSDAY, JANUARY 1, 1891. WHOLE No. 201

American Analyst,

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - - $1 per year.
Single Copies, - - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.

Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.

Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,

H. LASSING, M. D., } *Editors.*
T. P. McELRATH, }

No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

California Wine 3
Common Sense in Winter 4
Disappearing Types 2
Domestic Dietetics 5
Early Standards 4
Editorials 1
Natural Gas Exhausted; Is Hypnotism a Defence; Garbled Reports; The Wizard's Rod; Who is Struck? More Royal Lies.
Greenbacks, How Made 5
Sea Going for Invalids 6
Hay Exchange Official Bulletin 8
Silver 4
The Porcupine Plant 3

NATURAL GAS EXHAUSTED.

From those sections of both Pennsylvania and Ohio where natural gas has been almost exclusively used for fuel during the past few years, comes a uniform lamentation over the decreasing supply of that wonderful fuel. Decreasing pressure and failing supply in the Pittsburg and Indianapolis districts have been followed by the same phenomena in Ohio, and no one now doubts that the beginning of the end of natural gas is at hand. The comforting theory which was so much exploited a few years ago, that this gas was being constantly produced by subterranean agencies, and the other one, equally comforting, which was so tenaciously held by many in the gas belt, that as rapidly as one field became exhausted another would be found to take its place, have alike proved untenable. It must now be conceded that the supply is limited. The facts that prove this view are found on every hand throughout the gas belt. The northwestern Ohio district was always richer in this cheap fuel than the central part of the State, and the failure is therefore postponed somewhat, but it is certain, nevertheless. At upper Sandusky, which drew its supply from the outlying wells of the Findlay district, the use of gas has been discontinued entirely, the company being forced to shut off the supply by the alarming decline in pressure and the appearance of water in the wells. The manufacturers of Fremont have been shut off by the Northwestern Company, even after offering to pay metre rates for their fuel. At Toledo the mills are beginning to use crude oil instead of gas, because of failing supply, and at Findlay one company employing 300 men has been unable to get gas for the same reason. In short, in nearly all the natural gas towns the return to wood and coal or oil has begun, and while Findlay is the least affected, and will doubtless have gas for several years, the fact that even in that, the great centre of the gas belt, where the most wonderful sources of natural gas in the world have been found, the necessity of a careful husbanding of resources is apparent, proves that the end is, at furthest, probably not more than five years away. The failure of gas is accompanied by the appearance of oil. Many gas wells become oil producing when "shot," and oil is said to be finding its way into the gas mains in many places. This makes it certain that the use of crude oil for fuel will follow the failure of gas, and that the natural wealth of northwestern Ohio is accordingly far from being exhausted. This fact, too, will doubtless, in part, break the heavy loss that would otherwise have fallen upon those who have invested in the gas belt. This sum is large. In the Findlay district alone probably $38,000,000 to $40,000,000 have been invested in lands, leases and wells since gas was discovered, and expenditures are still being made. The aggregate throughout the gas fields is several times this. It is fortunate, indeed, that the prevalence of oil will prevent the great loss that would otherwise occur.

IS HYPNOTISM A DEFENCE?

The extreme views on hypnotism which some of the French medical experts expressed during the recent Eyraud and Bompard murder trial in Paris find indorsement among some prominent American investigators. Several New York physicians, as the result of their experiments affirm that hypnotic subjects may be made to commit real or imaginary crimes for which they are in no degree responsible. Dr. G. M. Hammond said to a reporter: "I have two patients who will, at my command, do anything from the commission of murder, forgery or burglary down to lesser crimes. They will do these things either while in the hypnotic trance or at any specified time afterwards, and they will not know why they do them or that I have influenced them in the matter. After the commission of a supposed unlawful act they will show all the fear of detection and the desire to escape which an ordinary criminal would manifest. An eminent New York specialist in neurology, who has made hundreds of experiments, says: 'Several months ago I gave a subject in the hypnotic state what he thought was a pistol, and, pointing to another man, I said: 'There is a very bad man. He is a murderer and an enemy of society. He ought to be killed and I want you to shoot him.' The subject hesitated a moment and looked distressed, but finally, on repetition of the command, he raised his arm and fired, as he supposed, killing the man. Soon after another physician, handing the same subject an imaginary pistol, told him to shoot himself through the heart. With only slight hesitation the young man put the pistol to his heart and fired. He fell in a heap on the floor. His condition was one of almost complete collapse and we were greatly alarmed. It was a long time before we could revive him. We never tried that experiment again. If the power of hypnotic suggestion is so great that a subject will commit suicide at command, you may be sure there is no other extremity of action to which he may not be induced to go."

GARBLED REPORTS.

We were shown recently a circular endorsed "Extracts from the 21st Annual Report of the State Board of Health of Massachusetts, published for the benefit of grocers and consumers." This has been extensively circulated among New England grocers, evidently for the purpose of injuring spice dealers from other States than Massachusetts. It is true that these so-called extracts are taken from the report they claim to be, but it is also true that in making these extracts the names of all Boston spice dealers, which were given in the original report as having been found dealing in adulterated goods, have been omitted. This is dishonest, and will surely react upon the very people this garbled report was printed to help. Massachusetts spice men are not any more honest than others. They only comply with the law when compelled to do so.

THE WIZARD'S ROD.

A novel device for detecting the presence and nature of a mineral exposed in rock or earth is the electric mineral ore detector. This apparatus seems destined to be extremely useful to miners, as it reduces to a certainty the question of ascertaining the exact mineral value of the rock under test. To prospectors it is particularly useful, for though it consists of a battery and spark coil, with conductors ending in two platinum points, all are so compactly arranged that they can be carried on the back. On placing the two platinum points against a rock, the presence of metal is indicated by the appearance of a spark, the flame and color of which will afford an indication of the nature of the body which the electrodes have touched. Such is the trustworthiness of this device for purposes of testing that by placing the electrodes against a rock containing metal in a free state, its presence may be detected by

COLGATE'S COLEO.



A PURE PETROLEUM PRODUCT FOR TOILET AND MEDICINAL USE.

merely applying one electrode and passing the other rapidly over the surface. The detector is especially useful in determining the presence or absence of metal in old shafts or tunnels; while, when applied to the walls of a shaft or cut, it can be depended on for the recovery of a lost lead, unless the lead is entirely pinched out. It is said that a novice can handle this apparatus almost as successfully as an old miner, and the sorting of ores can be accomplished with certainty, being determined by the color of the spark produced. This handy miner's companion is further valuable in being a ready means of exploding blasts in connection with electric primers.

WHO IS STRUCK?

It seems to be a thankless task for a newspaper to expose a humbug. The public are so ready to be gulled that the very fact of exposure very frequently is accepted in the light of commendatory advertisement, and the thing held up to scorn is at once hunted up and purchased. The *National Druggist* of St. Louis in its issue of December 15, gives a double-leaded rap at the anomaly referred to in the following editorial squib: "The Radam Microbe Killer and the *Druggists' Circular* continue to get a good deal of gratis advertising in the medical journals on the strength of the $200,000 suit gotten up between them. The *Circular* continues to call on the doctors for support in its dire extremity, and Radam meanwhile gets in his little work in posing as the stern defender of wonderful microbicide. By the way, why don't the parties in interest accept our suggestion as to the surest method of testing the Microbe Killer? Give it a show, and if it doesn't instant neously kill the inventor of "drug journal censuses," manipulator and manufacturer of statistics, and discoverer and godfather of "Baker Comm.," Mr. B. Lillard, Esq., it isn't worth a hurrah in Hades, and can safely be defied by the sickliest and puniest microbe that ever crawled out of a spoiled culture medium."

MORE ROYAL LIES.

The Royal Baking Powder Company has issued another of its characteristic advertisements. It is headed "The Official Report," and is ostensibly signed by "Willis G. Tucker, M. D., Ph. D., Analyst." In this advertisement they cunningly try to convey the impression that the official report of the Health Board of the State of New York has certified that their baking powder "contains no impurities, adulterants, or unwholesome constituents whatever." This no respectable chemist can truthfully say, so long as the Royal persists in padding the strength of its powder with ammonia. This deceiving advertisement further attempts to throw sand in the public eyes by asserting that the cream of tartar used by the Royal Baking Powder Company is purer than that used by other manufacturers. The falsity of such a statement becomes apparent when it is remembered that all cream of tartar manufactured in this country is controlled by a pool, and is made of one standard, and the product of the different manufactories is interchangeable. The concluding statement that "the Royal Baking Powder is superior to any other powder which I have examined," is so condemnatory of Dr. Tucker's experience that we cannot believe he ever wrote such a self-stultifying certificate, especially as we well know the Royal Baking Powder Company's methods of manipulating chemists' certificates. In this case, however, they have evidently gone too far, and Dr. Tucker must in self-defence stop such an improper use of his name. The public is not any longer misled by such miserable misstatements.

DISAPPEARING TYPES.

THE THEORY OF NATURAL SELECTION ILLUSTRATED BY THE GRADUAL EXTINCTION OF ANIMALS.

A startling publication is on the point of being issued by the Smithsonian Institution, which will show that many of the most valuable species of animals at present inhabiting the world will inevitably be driven off the face of the earth and rendered absolutely extinct within a few years from this date. For example, the elephant is already doomed. Each year 100,000 of these pachyderms are slaughtered to supply the market with ivory. Up to within a comparatively recent period, commerce drew chiefly upon the great stores of "dead" ivory in possession of African natives, which had accumulated for centuries; but now this reserve stock has been exhausted, and all the tusks exported from the Dark Continent must be got "green" by hunting live elephants. Thus the herds are being rapidly wiped out, not to mention the incidental fact, according to Explorer Stanley, that every pound of ivory that reaches Europe costs the life of a man, woman or child, while every twenty tusks are secured at the price of an entire district, with all its people, villages and plantations. This, of course, is due to the intimate connection which exists between the ivory-gathering business and the slave trade. You will get some notion of what 100,000 elephants mean if you will consider that, placed in line, that number would stretch 180 miles. As for the slaves, they are secured for the purpose of carrying ivory to the coast for the Arabs, who attack and destroy the native villages, carrying off into captivity those of the inhabitants who are serviceable as porters and killing the rest. In this way whole regions in Africa have been depopulated and laid waste. It is fashion, however, that is most importantly responsible for threatened extinction of animals well worth preserving. To prove this statement, reference is made to a single recent auction sale in London, at which were disposed of under the hammer 30,000 monkey skins, 250 000 Australian opposums' skins, 400,000 humming-birds' skins, 6,000 skins of birds-of-paradise, and 360,000 assorted birds' skins from India. In all the collections in the world, public and private, there do not exist so many birds' skins, stuffed or otherwise, as the total of these amounts to. Evidently the beautiful birds of the earth must go, and Australian opposums and monkeys have no show whatever. One dealer last year sold 2,000,000 skins of birds. Every one knows by this time that the fur seals are also doomed. Having been altogether exterminated from the rookeries in the southern seas where they used to congregate in such countless myriads, they are now being wiped off from their last resting-place on the Pribylov Islands, in Behring Sea, by remorseless pirates in schooners, who kill ten for every one they get. A like fate awaits at short notice the hair seal, 875 000 of which were slain last year for leather and oil. Even the alligators, crocodiles and other reptiles are not spared. Even they must disappear, because their hides are wanted for reticules, pocketbooks and other "fancy articles." Man—more particularly the Caucasian—is the most destructive of animals. His appetite for killing is insatiable, and to this mere taste for slaughter for its own sake the marked and rapid changes at present being wrought in the fauna of the world are largely attributable. Among the valuable beasts now swiftly succumbing to the sportsman's rifle is the true zebra, which is confined at this moment to a small area in south Africa, while the giraffe is quickly disappearing from the same cause. Let loose a white man with an equipment of improved weapons in the wilds, and he will call it "sport" to slay wantonly everything that he can get a pop at—not for food, but simply for the sake of taking away life. It has remained for civilization to thoroughly develop this type of savagery. The only parrot known to this country, which was formerly plentiful as far north as Kansas, is now being finally extirpated in Florida by visitors who kill the bird for "sport." They are naturally tame, and it is easy enough to knock over half a dozen at one bang. They are no good to eat, but then they make such a pretty mark for a gun! A while ago the so-called "passenger pigeon" flew by millions in the Ohio Valley and as far east as Massachusetts. Now but a very few of them are left. They have been shot by wholesale, and while they lasted were commonly utilized for shooting from traps. It is great sport to take a pigeon that has been captured in a net, put him in a box, and pop the poor creature at short range when he flies out at a signal, with about one chance in fifty for his life. In this way useful animal after animal is being driven to extinction. The list of those which civilized man has driven off the earth, where God is supposed to have put them for his use, will be an appalling thing to think upon a short time hence. Wherever a valuable beast is found in great and profitable numbers, the first thought seems to be to go and wipe it out. That is particularly a Caucasian instinct. The giant tortoises of the Galapagos Islands, which have for a long time past been most serviceable as food for supplying ships that touched there, are being finally disposed of. No more big ones, of the sort that weigh from 500 to 700 pounds apiece, remain, but only a few little fellows not worth taking. These are land turtles, and used to be caught crawling about on the island sluggishly, so little trouble being required to gather them in that a single party of sailors would often bring in as many as twenty from one expedition. Now they are nearly all gone, and soon there will be none left. As to that enormous, but comparatively helpless beast, the walrus, its doom is likewise sealed. Before the weapons of those who pursue it to get its hide for boats and leather, and its tusks for ivory, and its whiskers for opium-pipe picks, it is quickly disappearing. The method adopted by the hunters is to approach a group of walruses on the ice and, after picking off the more alert bulls from a safe distance with rifles, slaughter the herd at leisure. It was somewhat in the same way that the great arctic sea-cow, now long extinct, was utterly annihilated. This mighty mammal, related to the manatee, and dugong of southern waters, was first discovered on what is now known as Behring Island by Behring's expedition in 1741. An enthusiastic naturalist attached to Behring's party described it as being, when full grown, thirty feet long, twenty feet around the body, and about 8000 pounds weight. It had a small and toothless head, and its skin was dark and rough like tree bark. The hide was considerably over an inch in thickness, and so tough that the sailors had to chop it with axes. A few years ago Dr. Stejneger, of the Smithsonian, visited Behring Island for the purpose of procuring some bones of this extraordinary creature and did succeed in obtaining an entire skeleton, the dimensions of which confirm the reports made by the naturalist referred to. These sea-cows were accustomed to herd about the mouths of streams and live upon sea-weeds, which required no chewing. They were stupid and almost helpless, owing to their bulk and clumsy build. For many years vessels sailing

for the northwest coast of North America were accustomed to stop in at Behring Island to lay in a stock of fresh and salted sea-cow. Probably there were not more than 2,000 of the beasts at the beginning; they were slow in reproducing their species, and the last of them was killed in 1767. In addition to this ruthless murder has also exterminated recently the California sea-elephant, a huge amphibious mammal of the west coast, which grew to be nearly twenty-five feet in length and had a long proboscis, whence the name given it was derived. These great beasts, sought for their flesh and oil, were driven by the hunters up into ravines away from the shore and butchered by wholesale, the bodies of those first killed serving as a barricade to prevent the others from escaping. So in this way the last of them has probably been destroyed, though an effort is at present being made to find a pair alive for propagating from in the National Zoological Park here, where much attention will be devoted to the preservation of species which would otherwise be lost to the world—the buffalo among the number. Everybody knows the history of the great auk's extermination. A single shell of one of its eggs, without the contents, was sold the other day at auction for $1,500. And yet this bird was found on Funk Island, off the Newfoundland coast, sixty years ago, in numbers that were simply countless. But the people from the mainland used to go over to the island in summer and kill them by myriads, to eat and for their feathers. They were very appetizing roasted, and were so fat that they served for fuel also, so that half a dozen great auks did to cook a meal of their brethren for dinner. The result of this was that forty years back the last of these interesting fowls perished, and there is no longer one of them in existence. The Smithsonian has practically a corner on their bones. A while ago the institution sent a distinguished osteologist, Professor Lucas, to Funk Island for the purpose, and he brought back nearly a barrelful of such remains. If you want a skeleton now, you will have to send to Washington for it, and it will cost you about $600. Another bird that has become extinct lately in a very extraordinary and unaccountable fashion is the Labrador duck. This fowl was black and white in color and in no way very valuable to man, inasmuch as it fed on fish and had a corresponding flavor; but the interest attaching to it is due largely to the curious manner of its disappearing. So far as is known, there were never very many of these ducks, which used to be shot occasionally by sportsmen along the North Atlantic coast from Labrador to Chesapeake Bay. A few used to be captured each year by a taxidermist at Camden, N. J., on a trot-line, which he set for them baited with fish just under the surface of the water. About 1870, however, they ceased to be found, and since then no Labrador duck has ever been seen. Various theories have been formed to account for the mystery, it having been suggested among other things that a distemper was accountable in the premises. Others have surmised that the birds, being few, got mixed up with the flocks of other species and were lost. One danger that has to be encountered by birds of a not very numerous variety is that, in migrating, their flocks will lose sight of each other. The pair of stuffed Labrador ducks now in the possession of the National Museum at Washington were killed by Daniel Webster, and were themselves the originals from which the great Audubon made his plates of the creature. A still more astonishing instance of the extinction of a species is found in the case of the tile fish, which was first found, so far as science is aware, by vessels fishing for cod a few years ago in waters south of Long Island. This fish grew to be forty pounds in weight and was very palatable, so that the fish commission thought that it might be propagated and rendered most valuable for food purposes. Unfortunately, just as the commission was on the point of beginning operations with this end in view, a vessel coming in reported that it had run across, at a considerable distance out from land, great quantities of floating fishes, most of which were tile fish. From that time until now not one tile fish has ever been seen, so that evidently the entire species was wiped out at one fell swoop. One theory entertained is that an arctic current, bearing icebergs, came unusually near the shore and suddenly reduced the temperature of the water to such a low point that the tile fish were all killed. Speaking of extinct fish reminds one that the halibut is growing scarcer year by year, while lobsters are becoming so few and small that the canneries find it difficult to obtain supplies, and shad and salmon are only kept up by the propagating efforts of the fish commission. Most interesting of extinct birds is the dodo, which was a kind of pigeon, somewhat larger than a swan, very stupid, and unable to fly, its wings being almost rudimentary. It weighed fifty pounds when full grown, had a huge bill, was provided with a tail that resembled a feather-duster, and waddled about on very short legs. Its name means, in the Portuguese tongue, "simpleton." The dodo is first mentioned by the Dutch Admiral Van Neck, in his account of a voyage to the island of Mauritius in 1595. His sailors and those of subsequent vessels which touched there destroyed the unfortunate bird wantonly, and it was entirely extinct one hundred years later. Two giant birds of antiquity there were which modern science knows comparatively little about, though some of their bones and even their eggs are to this day preserved in museums. One of these was the epiornis of Madagascar, which stood twelve feet high and weighed one thousand pounds. Only two of its eggs have ever been discovered, and they were found in graves. Each of them was as big as six ostrich eggs, or one hundred and forty-three good-sized hen's eggs. In ancient times the Arabs used to go in their trading vessels as far down the African coast as Madagascar, where they saw these astonishing fowls, bringing back accounts of them which were destined to give rise to the fables concerning the roc of the "Arabian Nights." In New Zealand, at a later period, is known to have existed an even heavier bird than the roc, known to science as the dinornis, which was not quite so tall, however. It stood about nine feet high when grown. The bones of one leg of this creature are exhibited at the National Museum, and they measure six feet from foot to hip. The dinornis did not have even rudimentary wings. It became extinct about the time Captain Cook visited New Zealand, and he might very possibly have found one more alive had he tried. When he arrived the natives were still wearing the feathers of the bird for ornaments. Around certain hot springs in New Zealand great accumulations of the bones of the birds were subsequently found. It is supposed that some sudden change in the New Zealand climate compelled them to gather for warmth in these places, and there they died. It reminds one of a very plausible theory that is entertained regarding the great beds of fossil animals found in the West in this country. Stress of weather, the notion is, crowded the beasts to a sheltered place, and there a blizzard came and destroyed them en masse. —Rene Bache, in *Boston Transcript.*

THE PORCUPINE PLANT.

A LATTER-DAY ANANIAS, WITH ALL MODERN IMPROVEMENTS.

A few years ago, says the eminently accomplished liar of the Albany (N. Y.) *Telegram*, I had a thrilling experience in southern Georgia, when I saved a negro from the fatal embrace of the terrible man-eating plant. This carnivorous wonder is indigenous to the banks of the upper Nile, but for convenience a little colony has established itself about 100 miles west of Savannah, and its members maintain their pristine fondness for the Ethiopian. The plant is four to six feet high, and has long, narrow leaves, that change the second year to fan-shaped. Each plant produces only one flower, which is cup-shaped, eight feet in diameter, and borne on a scape twelve feet long; it is composed of five petals, one being very much longer than the others. The color of the bud is crimson, of the open flower, purplish-green embroidered with yellow. It is very beautiful, and fragrant as the attar of roses, that is, till it eats a man, then "the smell is like that of a charnel house." From the roots fine nerves run out in all directions for a rod or more and communicate with a brain in the stem of the plant. The leaves are thickly armed with keen-pointed, poisonous thorns, behind which are sacks filled with compressed air. As soon as a negro treads upon the root-nerves all the leaves facing in that direction discharge a broadside of their deadly thorns into the darky, and the root-nerves emerge from the ground and envelop, strangle and devour him. "These man-killers are particularly shunned by the negroes, who say that a porcupine plant that has once killed a man becomes rapacious for human blood, and shoots out its tendrils for many rods around to entrap unwary negroes." They also call it "Devil Plant."

CALIFORNIA WINE.

ARPAD HARASZTHY AND THE THIRTEEN CLUB

Once more California wine has won a victory in a fair contest with the foreign product, and to the house of Arpad Haraszthy & Co. the honor thereof is due. One of the most famous social clubs in the United States is that peculiar organization known as the Thirteen Club, of New York. Its roster comprises 2,000 of the leading members of society of the metropolis, and this being the case, it is hardly necessary to say that the club members are competent judges of table wines. The organization has been in existence for many years, and heretofore the honor of appearing on its table has been accorded the imported article. However, the progress made by California wines during the past year in the New York market has borne its legitimate fruit, and for the first time in the history of the Thirteen Club the products of the Golden State have been given the preference at their banquet table. The annual feast of the club was held on Saturday evening last, at which over 2,000 covers were laid. The wine list included only the wines carried by the house of Arpad Haraszthy & Co., as follows: Eclipse, Extra Dry; O. V. Chablis, 1886; California Punch; Port, Alto Viejo; Sherry Capay (1883); Reisling, 1885; Burgundy, 1884 (Santa Cruz); O. V. Zinfandel, 1885; Chateau d'Orleans Gutedel, 1886 (Sonoma); Madeira, 1884 (Esparto); Muscatel, 1886 (Yolo); Brandy, 1883. Messrs. Haraszthy & Co. are to be congratulated upon the signal victory that has been won by their wines.—*Pacific Wine and Spirit Review*, Dec. 15, 1890.

Quick Death.—Oil of peppermint in water, diluted even to one part in one million, will kill cockroaches in an hour.

Dry Air.—A small box filled with lime and placed on the shelf in a pantry or closet, will absorb dampness and keep the air in the closet dry and sweet.

Poor Device.—A self-igniting cigar has been invented. A fulminating substance is placed in the tip, and a light produced by friction, after the manner of an ordinary match.

Corn Cure.—Dissolve a few pearl buttons in the juice of a lemon. A creamy ointment will be produced in a few days, and this, applied on a rag for a few days, is said to be a perfect cure for corns.

Rope Protector.—Dry ropes immersed for four days in a bath containing twenty grains of sulphite of copper to a quart of water are for some time preserved from the attacks of animal parasites and rot.

Steel Balloons.—It has been proposed to make the upper half of war balloons of very thin steel, and the lower portion of ordinary balloon material, the whole so constructed as to hold hydrogen instead of ordinary gas.

SILVER.

ITS SCIENTIFIC, MONETARY AND COMMERCIAL RELATIONS.

Silver has always ranked next to gold among the common precious metals. Like gold, it is a "noble" metal in that it does not oxidize when heated in the air; and although it forms more stable compounds with other elements than gold, yet it is readily reduced to the metallic state by comparatively weak reducing agents. This quality, together with its beautiful appearance and its great malleability and ductility, renders it particularly adapted for its manifold ornamental uses, while its wide diffusion, in comparatively small amounts, formerly rendered it an excellent material as a standard of monetary value; but of late years the greatly increased supply from the Western mines has made its value much more variable, and unfitted it for purposes of coinage. Silver is found native, or in the metallic state, in both crystalline and aborescent forms. It also occurs amalgamated with mercury, and as chloride and sulphide. In most cases, however, the silver occurs as a sulphide, in connection with much larger proportions of the sulphides of lead, antimony or iron. Galena or sulphide of lead, a very common mineral, usually contains varying proportions of silver, and the ores of copper often contain enough of the more precious metal to pay for its separation. The extraction of silver from its ores requires long and rather complicated processes, but on a large scale it can be accomplished very cheaply and a comparatively poor ore will pay for its working. There are many old mines in Mexico and the West of which the refuse left by the ancient miners can be worked over at a profit. Unlike gold, which always occurs in the metallic state, the ores of silver are not readily recognized or worked by savage or semi-civilized peoples, and it has occasionally happened that among such peoples silver has been valued higher than gold; but the usual ratio between the price of silver and gold of about 1 to 20 has obtained more or less constantly for many years. Silver is the best conductor of heat and electricity known, slightly exceeding copper in this respect, the physical and chemical relations between these two metals are very close in many other ways, and if the "transmutation of the elements" is ever accomplished,—a very unlikely matter, by the way,—we may expect that these two metals will be shown to be at least brothers in the chemical family. The easy reduction of salts of silver to the metallic state renders it particularly adapted for electro-plating. Formerly the plating of cheaper metals by silver was accomplished by amalgamation with mercury, or other chemical means, but these processes have been almost entirely superseded by the use of the electric current, which rapidly decomposes a solution of cyanide of silver, and deposits a bright and perfect coating of the metal upon articles immersed in it. Silvering upon glass is effected by means of certain organic substances which have the power of precipitating silver from its solutions. When a solution of oxide of silver in ammonia is gently heated with Rochelle salts, glucose, glycerine, or tartaric acid, in a clean glass or porcelain vessel, a bright coating of metallic silver is deposited on the sides. Glass door-knobs, small mirrors, lantern reflectors, and the ornamental glass globes sometimes placed in gardens or parks, are silvered in this way, as well as the mirrors used in certain reflecting telescopes. Although silver has but little affinity for oxygen, it unites with the allied element, sulphur, more readily than any other metal. The "tarnish' which articles of silver take when exposed to the air is due to the formation of a thin film of sulphide, from the traces of sulphur compounds usually present in the air. The discoloration of a silver spoon with which an egg has been eaten is a familiar example, and has led to the manufacture by enterprising jewelers of platinum egg-spoons, which are unaffected by the sulphur compounds present in this popular breakfast dish. Every one who has carried matches and silver coins in the same pocket must also have noticed this undesirable combination. The most remarkable chemical property of silver, however, is found in its relation to light. It does not stand alone in this respect, for compounds of iron, chromium, and many other substances have their composition modified by this mysterious form of energy of the light beam; but silver is pre-eminent in this respect, and the wonderful change which is caused by this means is a film of chloride, bromide, or iodide of silver, is the basis of the most beautiful modern art of photography. Many years ago it was noticed that chloride of silver blackened when exposed to the sun's rays, and from this simple observation the labors of Daguerre, Niepce, Draper, and their many successors have led to the present remarkable development of an art which produces pictures superior to the works of the best artists, at a nominal price, and by a process so simple that it is successfully practised by thousands of amateurs, with no especial scientific knowledge, as a recreation and amusement. This action of light upon certain salts of silver is especially remarkable as showing the connection between matter and energy, or more strictly, between these forms of energy known as chemical affinity and actinism. The molecules of bromide of silver in the sensitive film are held together by some attractive force which we know little about, but call chemical affinity. Something—some force or energy—comes to us in the sunbeam which enters into these molecules and forces them apart into other combinations; but just what it is or how it is accomplished is something which we cannot explain. In the case of the element selenium, its electrical relations are simply modified by the disturbing influence of the solar radiant energy, thus showing an intimate connection between them; and although it has long been known that light, heat power, actinism, electricity and chemical affinity were but different manifestations of a single form of energy, the results of modern investigations tend to show that the connection between them is much closer than has ever been suspected, and that we are, perhaps, on the eve of discoveries in regard to the nature and properties of matter and energy which will revolutionize the theories formulated from the facts at present known to us.—*Popular Science News.*

EARLY STANDARDS.

WHAT THE ANCIENTS USED FOR WEIGHTS AND MEASURES.

The jewelers of the middle ages used in their delicate scales the hard brown seeds of the Moorish Carob tree (Ceratonia siliqua), and the weight of diamonds is still reckoned by carats, each carat being equal to $3\frac{1}{6}$ grains troy. The earliest attempt to regulate British weights and measures appears to have been suggested by this example: In 1266 it was declared by statute that "an English penny, called a sterling, round and without any clipping, shall weigh 32 wheat corns in the midst of the ear; and 20 pence to make an ounce, and 112 ounces 1 pound, and 8 pounds do make a gallon of wine, and 8 gallons of wine do make a London bushel, which is an eighth part of a quarter." We have here the basis of the British system of reckoning as it survives to-day—the grain, pennyweight, ounce, pound, gallon, bushel and ton, and 240 silver pence equal to a pound sterling. The British gallon is still used for both dry and liquid measure, and the traditional relation between the pound and the gallon is set forth in the old rhyme, which declares that

A pint's a pound
The world around.

In 1324 the measures of length were defined by a similar statute providing that "three barley corns, round and dry, laid end to end," shall make 1 inch, 12 inches a foot, and 3 feet a yard. The 32 wheat corns, adopted as the basis of the British system, appeared to have weighed $22\frac{1}{2}$ grains troy, so that the pound of 1266 was equal to 5,400 grains troy. This is the old Saxon pound. The pound troy (poud du roy) is the Roman pound, and was doubtless in use simultaneously with the Saxon pound for hundreds of years, but is first mentioned in the statutes of 1414, and was ordained as the standard weight for gold and silver in 1527. As 24 grains make a pennyweight troy, the new pound contained 5,760 grains, exceeding the old weight by 360 grains, or three-quarters of an ounce. The strict pound of 12 ounces was used only in weighing the precious metals, and, with different subdivisions, for the costly drugs and medicines dealt out by apothecaries. For heavy goods (avoirs du poids) a more liberal measure was given, like the baker's dozen, and 15 ounces was called a pound. In the same way 28 pounds were a quarter, and 112 pounds a hundred-weight, allowance being made for waste or wrappings. The increase of the pennyweight to 24 grains in 1527 raised the value of the ounce to 480 grains; and accordingly the pound of commerce containing 15 ounces was raised to 7,200 grains. As 250 grains of wine were reckoned equal to a cubic inch, the gallon, containing 8 of these pounds, or 57,000 grains, had a capacity of 230.4, or in even numbers, 231 cubic inches. This is the wine gallon now in use in the United States. The ale or beer gallon, of 282 cubic inches, was originally a measure containing 8 pounds of wheat at 204 grains to the cubic inch. The name avoirdupois was transferred at a very early date from the heavy goods, which it indicated, to the system by which they were weighed. It occurs first in the statutes of 1335 and 1353. The early pound of 15 ounces of 450 grains each (6,750 granis) was raised by law, as has been shown, to 7,200 grains, making 16 of the old ounces. In practice, however, the pound seems to have fallen below the standard to about 7,000 grains, and this weight was finally declared to be a pound avoirdupois, the avoirdupois ounce, or sixteenth of the pound, being thus reduced to $437\frac{1}{2}$ grains.

COMMON SENSE IN WINTER.

SOME OF THE FRUITFUL CAUSES OF COUGHS, COLDS, CHILLS, AND THE LIKE.

It requires a good deal of intelligence and care to avoid sickness arising from sudden variations of temperature. Unless great care is taken to keep the body at something like an even temperature, mischief is very apt to result, and a good deal of it comes from the injudicious use of outer clothing. Some have prejudices against overshoes, especially rubbers, and yet in slushy days nothing but rubbers will keep the feet dry. Others get into trouble by being too indolent to remove their rubbers in-doors, so that their feet perspire, and subsequently become chilled. The common-sense rule is to wear rubbers when they are needed, and not to begrudge the time and trouble necessary to take them off when they are not needed. Overcoats and wraps, while conducive to comfort and health, are also the cause of much illness arising from perspiration and chills. The sensible course is to have garments suitable to various degrees of temperature, and to be careful to wear them at suitable times. One who has much walking to do needs less clothing than one who rides. A skater has no need of a big ulster to keep him warm; but if he is going sleighing he can hardly get buffalo robes enough. Shovelling snow is hot work in the coldest weather. People do themselves much harm by wearing heavy outer garments in the house. Men are too lazy to take off their overcoats, and women, for various reasons, keep on their furs in church or theatre. The result is that when they go out they get chilled, and start on the high road to bronchitis or pneumonia. Too much care cannot be taken to accommodate the clothing to the temperature—to take off outer clothing at once upon entering the house, unless the house happens to be as cold as out-of-doors. The changes of temperature are so sudden that both comfort and health are promoted by the possession and use of garments of various thicknesses as they may be required. There are warm days

in winter when the heaviest winter clothing is not only uncomfortable but unhealthy, because of the danger of excessive perspiration and subsequent chills. Outer garments should be made so as to be easily removed. Ladies have heretofore experienced much inconvenience from overheating in furs and heavy wraps at the beginning and end of the season, but fashion has lately come to the rescue with short coats and capes for the milder wintry weather. Reefing jackets have performed similar service for men. Many persons suffer inconvenience and illness from wearing too heavy underclothing. The safer course is to put on extra clothing from the outside, so that it may be readily removed as occasion requires. A good deal of sickness comes in the winter from injudicious dressing for social events. Both men and women put on evening costumes which are less warm than those they habitually wear during the day. Then they fail to make up the difference in their outside wraps, and when they emerge from heated rooms after an evening's dancing, they have laid the foundation for all sorts of pulmonary troubles. Medical men agree almost unanimously that in this climate flannel underwear is almost absolutely essential to health. Those who wear it daily should change it at night. It is better to wear just enough clothing to keep the body comfortably warm under all circumstances, and to spare no pains to adjust the clothing to the circumstances with promptness. There is an old proverb that a man who sits with his back to a draught sits with his face to the grave. Any one who is in a perspiring state and sits in a draught in that state may be certain to pay the penalty in a very short time in pains and aches. Unless carefully used, heavy outer garments will be responsible for much sickness.—*Sun.*

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

January.

MEATS.—Beef, mutton, ham, kidneys, liver, venison, sausage, pork.

GAME AND POULTRY.—Grouse, hare, pigeon, quail, chicken, duck, turkey, rabbit, geese.

FISH.—Bream, cod, crabs, eels, carp, flounder, halibut, herring, lobster, mackerel, mussels, oysters, perch, rock-fish, salmon, smelt, whitefish.

VEGETABLES.—Artichokes, beets, beans, cabbage, carrots, cauliflower, celery, garlic, lettuce, onions, parsley, parsnips, potatoes, shallots, spinach, squash, tomatoes, turnips.

FRUIT.—Apples, bananas, grapes, oranges.

PRACTICAL RECIPES.

RICE SOUP.—When you boil a fowl save two quarts of the water in which it is cooked; put it over the fire with a small teacup of rice, half an onion cut in two and a stalk or two of celery; simmer slowly for two hours; strain and mash the rice through a sieve; return to the fire; season with salt and pepper, add one quart of milk or one pint milk and one of cream, and a tablespoonful of butter; boil up once and serve.

A DUTCH RECIPE FOR CABBAGE.—Quarter a head of cabbage and remove the stalk, cut the cabbage in very fine strips, sprinkle plentifully with salt and half a cup of vinegar, let it stand while you cut into dices a scant half pound of bacon, fry it to a crisp, then take out the bacon and add the cabbage to the hot fat; add half a cup of soup or gravy, cover and let it cook slowly for an hour, then add a wine-glass of claret, a teaspoonful of sugar and a pinch of caraway seed; dredge with flour, simmer ten minutes and serve.

BROILED YARMOUTH BLOATERS.—Split them down the back, remove the backbone and the head, broil about three minutes, pour over them some melted butter in which is squeezed some lemon juice, and serve at once.

SANDWICHES FOR AFTERNOON TEA.—Chop up very fine the meat of a roast chicken and the same amount of boiled tongue, put them in a mortar with a lump of butter and pound to a paste, adding seasoning of salt, pepper, cayenne, mace, nutmeg, and a little grated lemon peel; cut your bread very thin, butter it, spread with the mixture, put two pieces together, cut off the crust, cut the slice in two, pile on a plate daintily and serve.

RICE MUFFINS.—Mix and sift together three cups of flour, three teaspoonfuls of baking powder, one teaspoonful of salt. Beat thoroughly two or three eggs and to them add two cups of milk and pour it into the flour; melt three teaspoonfuls of butter and mix it into a cup of boiled rice; add this to the other ingredients, beat thoroughly and bake in patty pans or muffin rings.

SWEETBREAD PIE.—Soak, blanch, and cut into three pieces each, two or three sweetbreads, cook for fifteen minutes in stock with a can of mushrooms; make a few forcemeat balls and put them in a dish with the mushrooms and sweetbreads, add some hard boiled eggs and the tips of some asparagus; thicken the gravy; season, pour it over the things in the dish, lay a few thin slices of bacon on top of all, cover with a good crust and bake in a moderate oven.

FRENCH LOAF CAKE.—Two and one-quarter cups of sugar, five cups of flour, one cup of milk, three eggs, a wine-glass of brandy, two nutmegs, two and a half teaspoonfuls baking powder, one-half pound raisins, one-quarter pound citron. Sift the baking powder with the flour, beat butter and sugar to a cream, add part of the flour, and the milk a little warm, then the beaten yolks, the remainder of the flour with the whites well beaten; spice, brandy, and fruit.

COCOANUT DROPS.—One pound powdered sugar, a scant half pound flour, one pound cocoanut, and the whites of six eggs well beaten; bake in a quick oven.

GREENBACKS.

HOW THEY ARE DESIGNED AND MANUFACTURED.

On the wide-stretching plane over which the Washington monument casts its slim shadow when the sun is setting, stands a tall brick building, made conspicuous by a still taller tower and a waving flag. All day long, says the *Washington Post*, a chimney belches forth black smoke that drifts out upon the Potomac, and a noisy steam-pipe sends forth a cloud of white vapor in regular respirations. At eight o'clock in the morning nearly one thousand persons pass under its arched doorway, and at five o'clock they emerge again, like bees from a hive. In the mean time they make money, make it in a purely matter-of-fact way, as a weaver weaves carpets, or a cobbler mends shoes for a daily living. They exist in an atmosphere of wealth. Great stacks of money, that are a sight for poverty-stricken eyes, stand around them. The poorest girl in the bureau of engraving and printing handles enough money every day to make her rich for life. It is an interesting sight to see how the Government turns out day by day tons and tons of crisp new bank notes or silver certificates; to watch the silent engravers etching the steel; the shirt-sleeved plate-printers take the impressions; and the careful messengers carry off the finished bills by the cartload. So interesting, indeed, is this work of money-making that the bureau began to be overrun by visitors who seriously interfered with its work. Now, visitors are only admitted between 10 A. M. and 2 P. M. on Saturdays, and during these hours nearly every stranger in the city presents himself at the arched door, and, under the leadership of a pretty girl guide, sees how Uncle Sam replenishes his cash. When Congress has ordered the issue of a new series of notes, the first step in the bureau is the preparation of what is known as the model. This is generally a handsome pen-and-ink drawing of the proposed bill, and is submitted finally to the Secretary of the Treasury for his approval. Nothing about the note is left to mere chance. The banker does not regard money from a purely artistic standpoint. He wants the denomination to be plain and distinct, and he asks that the figure of the note be placed in the upper right hand corner in order to facilitate counting. The fact that a note must bear a certain title rather restricts the artist in preparation of the model, but very frequently, as in the case of the new twenty-dollar silver certificate, which bears the portrait of the late Secretary Manning, both utility and artistic beauty are combined. In this particular bill the artist has made a striking innovation. The portrait, instead of being at one end of the note, is in the centre, and is supported on the sides by figures of Prosperity and Labor. The lettering is at the extremities of the certificates, and the effect produced by this new idea is really very striking. The model having been adopted, the next step is the engraving of the plate. The room in which this work is done is a large well-lighted apartment on the ground floor. It must not be supposed for an instant that the entire face of a note is engraved by one man. The portrait goes to one, the vignette to another, the lettering, script and border to others, and so on, until no less than twelve men are at work. It is a long and tedious task, requiring great care and accurate skill. No less than six weeks' time is necessary for the engraving of a portrait like that of Secretary Manning. The steel used is all imported from England, and is a remarkably fine grade. Engravers all over the world use English steel and have done so for a century. Steel of equal quality could be made in America, but the demand would not be sufficient to recompense for the cost of the plant. Even the engraving tools are imported, being manufactured by a Parisian firm, which for many years had a monopoly of the business. When at the end of many months of careful engraving the various portions of the note are finished, an impression of each section is taken upon a solid plate of steel. Each separate part is placed in the position it would occupy on the note, and when the transfer is finally accomplished, the face of the new bill appears in perfect form. The plate is hardened, and across its engraved surface is passed a soft steel roller. The depressions of the plate appear on the roller as a raised surface, and when the little cylinder has been hardened it is a perfect die. It, in turn, is rolled by tremendous pressure upon a plate of soft steel. The power exerted to force the fine lines of the die into the steel is so great that a thin bit of paper placed in the plate leaves a deep impression, and a bit of lint, scarcely visible to the naked eye, forms a rough scar. A fly speck under this pressure makes a deep hole in the metal, and particles of dust must be carefully removed, lest they, too, might leave their imprint. This transfer process not only allows any number of plates to be made, but is an excellent guard against counterfeiting. Each face and each reverse of a note, being taken from the same die, are exactly alike. In no other way could this result be reached. No engraver, be he ever so careful, could reproduce, without the variation of a hair's-breadth, any work of his brands. Four impressions of the die are then made upon a plate, so that the faces or backs of four notes are always printed at the same time. The plate, after being hardened, is finished. It costs the Government, from its inception to its completion, between $1,500 and $2,000 in actual outlay for labor expended upon it. This does not, of of course, include the expensive plant which is already owned by the Government, including one lathe for geometrical scroll work that alone cost $85,000. For national bank notes the same die is continually used, the only fresh engraving being the name of the bank.

Indigestion

Horsford's Acid Phosphate.

A preparation of phosphoric acid and the phosphates required for perfect digestion. It promotes digestion without injury, and thereby relieves those diseases arising from a disordered stomach.

Dr. E. J. WILLIAMSON, St. Louis, Mo., says: "Marked beneficial results in imperfect digestion."

Dr. W. W. SCOFIELD, Dalton, Mass., says: "It promotes digestion and overcomes acid stomach."

Dr. F. G. MCGAVOCK, McGavock, Ark., says: "It acts beneficially in obstinate indigestion."

Descriptive pamphlet free.

RUMFORD CHEMICAL WORKS,
PROVIDENCE, R. I.

BEWARE OF SUBSTITUTES AND IMITATIONS.

Caution:—Be sure the word "Horsford's" is *printed* on the label. All others are spurious. Never sold in bulk.

SEA-GOING FOR INVALIDS.

MERITS OF STEAM AND SAILING VESSELS FROM A SANITARY STANDPOINT.

A correspondent of the London *Lancet* writes: "I am glad to see in the *Lancet* an article saying so much in favor of sea voyages, but I think you have omitted one very important point, viz., the very great advantages of a sailing ship over a steamship, such as the greater cleanliness, freedom from smoke, and especially the freedom from the most unpleasant oily smell of the engines, also the greater size of the cabins. I speak from experience of a voyage to Australia and back in sailing ships, from which I derived much benefit. I was lately in a steamship and was greatly surprised at the difference; go where I would on the ship I could never escape from the oily smell of the engines. The food on the sailing ship was very good indeed." Exigencies of space forbade a comparison of the merits of sailing vessels and steamships in the article to which the correspondent refers. The point is, however, worthy of attention, and the advantages of a sailing vessel enumerated above are real and important. A sailing vessel is usually cleaner, quieter and roomier (in proportion to the number of passengers) than a steamer, and on a long sea voyage the importance of cleanliness, quiet and space can hardly be overestimated. If no other consideration had weight it would not be difficult to lay down the rule that for invalids a sailing vessel should always be preferred to a steamer. But the question is more complicated than our correspondent's letter would seem to indicate. A sailing vessel is open to the objections that the voyage is sometimes very prolonged and monotonous—that the detention in the hot and moisture-laden atmosphere of the belt of calms may extend to a week or a fortnight and is a very trying time, and that few or no opportunities are afforded for touching at ports to obtain fresh vegetables, fruits, etc. Some animals, such as pigs and ducks, thrive well at

CLEVELAND'S SUPERIOR Baking Powder.

The Official Reports of the
United States Government, 1889,
Canadian Government, 1889,
New Jersey Commission, 1889,
Ohio Food Commission, 1887,
prove that Cleveland's is

THE STRONGEST

of all the pure* cream of tartar baking powders.

*Ammonia or alum powders, whatever their strength, should be avoided as injurious.

25 CTS. PISO'S CURE FOR CURES WHERE ALL ELSE FAILS. Best Cough Syrup. Tastes good. Use in time. Sold by druggists. CONSUMPTION 25 CTS.

RIDGE'S FOOD The MOST RELIABLE FOOD For Infants & Invalids. Used everywhere. *Not a medicine*, but a steam-cooked *food*, suited to the weakest stomach. Pamphlet free. Woolrich & Co., (on every label), Palmer, Mass.

SCOTT'S EMULSION

OF PURE COD LIVER OIL WITH HYPOPHOSPHITES OF LIME AND SODA.

THE STANDARD EMULSION OF COD LIVER OIL THROUGHOUT THE WORLD.

A BEAUTIFUL CREAMY MIXTURE—ALMOST AS PALATABLE AS MILK.

Having much greater remedial power than the crude Cod Liver Oil, without any of its nauseating effects.

Its PALATABLENESS, EASE OF DIGESTION, and long tolerance by most sensitive stomachs as well as its reliable therapeutic effect, has given it special favor with the medical Profession, and receives their unqualified endorsement and support.

Possessing as it does the tonic and stimulating properties of the Hypophosphites in combination with the strengthening and fattening qualities of the Cod Liver Oil—gives it a remedial value in WASTING DISEASES, ANÆMIA or IMPOVERISHED BLOOD, EMACIATION and CONSUMPTION—unequalled by any single or combined remedy in existence. The rapidity with which delicate children fatten and grow strong on this palatable Emulsion, is very remarkable.

Samples will be sent free except express charges to any wishing to try this preparation. For sale by all druggists.

SCOTT & BOWNE, New York.

sea, and their flesh remains agreeable and nutritious, but sheep and bullocks, not to mention chickens, turkeys, etc., nearly always show more or less deterioration in the quality of their meat after a few weeks at sea. Steamships with their ice chambers can surmount this disadvantage, but it is generally more or less felt on sailing ships, above all if the voyage is very prolonged. There is another point that must be kept in view in considering this question, viz., that steamships are more and more driving sailing ships out of the trade, and that the choice among the former is very much wider than among the latter. We mention these facts in order that the pros and cons of the case may be kept before our readers, but we by no means wish to imply that steamships should generally, and as a matter of routine, have a preference over sailing vessels. Much will turn upon the patient's malady, and upon his general constitutional state and usual mode of life. For serious cases (when such can be prudently sent to sea at all) a sailing vessel, always provided that reasonable comfort can be assured, will generally be preferable. Life on a steamship is too much like life in a hotel to suit such cases. Again, if the patient be specially desirous of rest and quiet a sailing vessel will best meet the case. On the other hand, if the case be one mainly requiring change and travel, if the patient likes company and must have variety and amusement, and if he cannot be content without a very liberal and constantly varied dietary, then a first-class steamship will probably please him best. Some patients, again, want "to see the world," and take great delight in the various calls made at different ports. Such persons must remember that sailing vessels hardly call anywhere, and very commonly make the long voyage to the antipodes in a single run. Probably a well-appointed yacht affords the best type of what is most desirable for travelers by sea, and while such is only at the disposal of a very limited number of patients, it is possible that "invalid ships," which are now becoming a recognized institution, may be gradually approximated in some degree to this type.

LITERARY ANNOUNCEMENT.

Among the features of *The Forum* for this year will be: "Results of the Census," a series of articles by Gen. Francis A. Walker; results of the latest research and of the most recent achievments in all important lines of work, in science and industry, by specialists; for examples, Dr. Austin Flint will write on "Dr. Koch's Discovery;" Dr. Richard Gatling on the "Development of Fire-Arms;" Frank H. Cushing on "The Hemenway Expedition;" Gaston Tissandier, the French scientist, "Dirigeable Balloons;" Prof. Emile de Laveleye on "The Partition of Africa," and so on; political discussions by the leaders of opinions of both parties in the United States, and by foreign statesmen; "Shibboleths of the Time," a series of critical examinations of popular opinions, by W. S. Lilly, the British essayist; autobiographical essays, a series to which some of the most noted men of the time, American and British, have contributed; discussions of social and religious problems in the United States; and literary articles, discussing the tendencies of literary work along all directions of activity, by the foremost critical writers.

P. E. Arline
At Home
January 1st to December 31st

Makes home cleaner, brighter and better. Cleaner—because it takes away what soap and other things leave. Brighter—because it does away with labor and hard work. Better—because it saves wear and tear on everything it touches, and nothing can be hurt by it.

Pearline "receives" every day. It gets blessing from millions of old friends—pleasant calls from a host of new ones. The best families welcome it. It goes everywhere. But it's "a stayer." When it once makes a call upon you, it stays forever—and you're glad to have it.

Beware Peddlers and some unscrupulous grocers will tell you, "this is as good as" or "the same as Pearline." IT'S FALSE—Pearline is never peddled, and if your grocer sends you something in place of Pearline, do the honest thing—*send it back.* 245 JAMES PYLE, New York.

THE
MORISON–ALLEN CO.,
MANUFACTURERS OF
Improved Water Purifiers,
145 BROADWAY, NEW YORK.

Improved Systems of FILTRATION
GRAVITY AND PRESSURE.

	Capacity.
W. F. & F. C. Sayles, Saylesville, R. I.,	3,000,000 galls. daily
American Wood Paper Co., Manayunk, Pa.,	2,000,000 "
Albermarle Paper Mfg. Co., Richmond, Va.,	1,000,000 "
The Franklin Sugar Refinery Co., Phila., Pa.,	500,000 "
Trenton Iron Co., Trenton, N. J.,	500,000 "
Diamond Ice Co., Wilmington, Del.,	150,000 "
Cranston's Hotel, West Point, N. Y.,	200,000 "

And Many Others.

THE MORISON--ALLEN CO.,
145 Broadway, New York.



A HIGH-GRADE PIANO
AT A VERY MODERATE PRICE.
NEW DESIGNS. FANCY WOODS.
Terms Easy. ✣ Monthly Instalments.
TWO, THREE AND FOUR PEDALS.
Catalogues, Prices, Terms, Etc., sent to any address.
EVERY PIANO WARRANTED 5 YEARS.
(Mention this Paper.)

Sura Cura
ROBINSON'S SURE CURE FOR
RHEUMATISM
And NEURALGIA,
And remedy for diseases arising from an impure state of the blood. An antidote for MALARIA. Price 50 c. and $1. Sent by mail on receipt of price. Send for Circular.
R. W. ROBINSON & SON,
184 Greenwich Street,
NEW YORK.
Sura Cura

Fine Table Wines
From our Celebrated Orleans Vineyard.
Arpad Haraszthy & Co
Producers of the
ECLIPSE
CHAMPAGNE,
530 Washington St.
SAN FRANCISCO.
GENERAL AGENCIES:
NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOSEPH R. PEEBLES' SONS CO., 73 West Fourth Street.
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.



(The Worcestershire.) LEA & PERRINS' (The Worcestershire.)
SAUCE.
IMPARTS THE MOST DELICIOUS TASTE AND ZEST TO
HOT AND COLD MEATS, GRAVIES, SALADS, SOUPS, GAME, FISH, WELSH RAREBITS, Etc., Etc.
Lea & Perrins
Signature on every bottle of the genuine and original.
JOHN DUNCAN'S SONS, NEW YORK.

THE N. Y. HAY EXCHANGE BULLETIN.

OFFICIAL REPORT OF THE HAY AND STRAW MARKET AT NEW YORK.

COMMISSION SALESMEN.

NOTICE.

These names are arranged alphabetically.

WM. AFFLECK & CO.,
Commission Merchants in
HAY AND STRAW,
Office No. 5,
N. Y. Hay Exchange Building.

J. ALSDORF,
Commission Dealer in
HAY AND STRAW,
33d Street and 11th Ave.,
NEW YORK.

E. A. DECKER. F. W. TOMPKINS.
DECKER & TOMPKINS,
Commission Merchants n
HAY, STRAW, GRAIN,
Office: 16 New York Hay Exchange Building.

L. S. DILLENBACK. T. O. PECK.
DILLENBACK & PECK,
MAIN OFFICE:
Room 0, N. Y. HAY EXCHANGE, N. Y. City.
STOREHOUSE AND BRANCH OFFICE.
101, 103 and 105 North 5th St.,
and 152 and 154 Berry St.,
Palmer's Dock. Brooklyn, E. D.

EDWIN B. DUSENBERRY,
COMMISSION MERCHANT,
And Wholesale Dealer in
HAY, STRAW AND GRAIN.
No. 1, N. Y. Hay Exchange, New York.

THOS. FONDA & CO.,
Commission Merchants
And Dealers in Hay, Straw, Grain and Country Produce,
13 & 14 N. Y. Hay Exchange Building.

N. A. FULLER,
COMMISSION MERCHANT IN
HAY AND STRAW,
33d Street and 11th Ave.,
NEW YORK.

THEO. P. HUFFMAN & CO.,
COMMISSION MERCHANTS
In Hay, Straw, Grain, Feed, &c.,
648 & 650 West 34th Street,
Bet. 11th & 12th Aves., N. Y.

H. B. Jenkins F. S. Williams.
JENKINS & WILLIAMS.
COMMISSION MERCHANTS IN
HAY, STRAW AND GRAIN,
HAY EXCHANGE.

The N. Y. Hay Exchange is located at 601 W. 33d St., corner 11th Avenue.

Only the cards of members of the N. Y. Hay Exchange appear on this page.

RULES FOR GRADING HAY AND STRAW

As Adopted by the N. Y. Hay Exchange.

CHOICE OR PRIME HAY—Shall be pure timothy, properly cured, bright, natural color, sound and well baled. No. 1—Shall be timothy, not more than one-eighth (⅛) mixed with "red top" properly cured, bright natural color, sound and well baled. No. 2—Shall be timothy, not more than one-quarter (¼) mixed with red top and blue grass, properly cured, good color, sound and well baled. No. 3—Shall include all timothy not good enough for No. 2, proportionately mixed with blue grass, red top, and clover, sound and well baled. SHIPPING—Shall include all hay not good enough for other grades, and may be natural meadow, free from wild or bog grass, and must not contain over one-third (⅓) clover, sound and well baled. CLOVER MIXED—Shall include all hay containing not over two-third (⅔) clover, and one-third (⅓) timothy, properly cured, sound, and well baled. CLOVER—Shall be medium grown, properly cured, good color, sound, and well baled. NO GRADE OR REJECTED HAY—Shall include all hay badly cured, musty, stained, or in any way unsound.

No. 1. RYE STRAW—Shall be clean, bright, long Rye, in bundles, sound, well and securely baled. No. 2—Shall be long Rye, in bundles. sound, well and securely baled. SHORT RYE—Shall be clean, not bundled, sound, well and securely baled. OAT STRAW—Shall be clean, bright, sound, well and securely baled.

In the New York market bale-wood is weighed in without tare. In all other markets it is deducted.

These quotations for choice, No. 1 and No. 2 hay are for large bales. 5c. per cwt. less when in perpetual press bales.

The New York quotations are per cwt. At other points, per ton.

NEW YORK, Dec. 29, 1890.

The following are the market prices to-day at New York.

	New York.
Fancy Hay	65c. @
No. 1	60 @
No. 2	55 @
No. 3	50 @
Shipping	45 @
Clover mixed	50 @ 55
Clover	40 @ 45
Prime Rye Straw	90 @
No. 2 "	75 @ 80
Oat and Wheat	45 @ 50

Receipts week ending Dec. 27, as follows:
Via N. Y. Central, 210 cars.
" West Shore, 122 "
Total, 332 cars.
From other roads by Lighter to 34th Street, 40 cars.

Receipts of hay for the past week have been heavier than for some time, and the customary dullness of trade during the holiday season, together with the recent snowstorm, has caused an accumulation of stock on hand, and although prices are not materially changed, except on Prime Hay, they are very weak and a downward tendency may be expected should the arrivals continue as they have of late.

We think, in all probability, after January 1st, the trade will be more lively and possibly the prices may advance to some extent.

Rye Straw firm and in good demand.

OSCAR KENT,
Commission Merchant,
HAY AND STRAW,
Room 20, New York Hay Exchange Building.
Personal attention guaranteed all consignments

JOHN KERWIN & SON,
DIRECT RECEIVERS OF
HAY, GRAIN and GENERAL PRODUCE
DEPOT AND STOREHOUSES,
Palmer's Dock, Nos. 97 & 99 North Fifth Street,
BROOKLYN, N. Y.
SHIPPING ADDRESS, PALMER'S DOCK, BROOKLYN, N.Y
West Shore R. R., N. Y. C. & H. R. R. R., N. Y. L. E. & W. R. R., Pennsylvania R. R., D. L. & W. R. R., Lehigh Valley R. R., and connections.

W. J. OVEROCKER. PERRY HATCH.
OVEROCKER & HATCH,
Commission Merchants in
HAY, STRAW AND GRAIN,
33d Street & 11th Avenue, New York.
References: West Side Bank, New York City; Exchange Bank, Holly, N. Y.

Gilbert Plowman, NEW YORK. Spencer Billington, PORT HUNTER, N. Y.
PLOWMAN & BILLINGTON
COMMISSION MERCHANTS,
HAY, STRAW, GRAIN, &c.
No. 15 N. Y. Hay Exchange,
33d St. & 11th Ave., NEW YORK.

JAMES ROZELL & SON,
Commission Merchants and Wholesale Dealers in
HAY, STRAW, GRAIN AND COUNTRY PRODUCE.
N. Y. Hay Exchange, New York.

SKINNER, BLOOM & CO.,
Successors to Rogers, Skinner & Co.,
COMMISSION MERCHANTS
And Dealers in
Grain, Flour, Hay, Feed, Meal, &c.,
74 CORTLANDT STREET, - NEW YORK.
Barge GYPSIE, Foot Bridge St., Brooklyn.

H. SLINGERLAND,
Barges MERCHANT and HARVEST QUEEN
Foot of West 11th Street,
HAY AND STRAW.
Also, 33d and 35th Streets, and all Railroad terminals. Special facilities for lighterage free goods.

CHARLES F. SWAN,
Commission Merchant in
HAY, STRAW & GRAIN,
At all the Railroad Terminals in New York, Brooklyn, Jersey City, &c.
MAIN OFFICE,
108 BROAD ST., NEW YORK.

TITUS, WELLS & WILLETS,
Commission Merchants and Dealers in
HAY AND STRAW,
133 Roosevelt St.,
NEW YORK.

VAN ALSTYNE & CO.,
COMMISSION MERCHANTS.
SPECIALTIES:
HAY, STRAW & FLOUR,
Nos. 2 and 4 Stone St., New York.
Liberal advances made on consignments.

G. E. Van Vorst. James M. Hillery.
VAN VORST & CO.,
COMMISSION MERCHANTS,
HAY, STRAW AND GRAIN
N. Y. Hay Exchange, 33d St., & 11th Ave.
562 & 564 West 34th St., NEW YORK.

NOTICE.

These names are arranged alphabetically.

HOSMER, CRAMPTON & HAMMOND,

NO. 43 COMMERCIAL STREET,

BOSTON.

COMMISSION MERCHANTS,

HAY, STRAW, FLOUR & GRAIN.

E. B. HOSMER, G. W. CRAMPTON, BENJAMIN HAMMOND, A. L. ROBINSON.

BOSTON HAY AND STRAW MARKET.

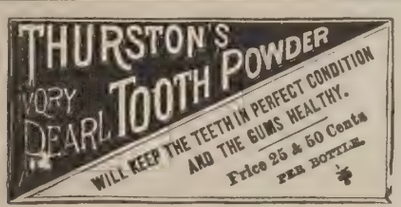
Hay, choice to fancy in large bales	$14.50 to $15.00
Hay, choice to fancy, perpetual pressed bales	13.50 to 14.00
Hay, fair to good	13.00 to 13.50
Hay, poor to ordinary	10.00 to 12.00
Hay, Clover and Clover mixed	10.00 to 12.00
Hay, swale	9.00
Straw, Rye, good to prime	17.50 to 18.00
Straw, Oat	9.00 to 10.00

BOSTON, Dec. 29th, 1890.

Receipts for the week are 320 cars of hay and 28 cars of straw; corresponding week last year, 240 cars of hay and 26 cars of straw. This has been a quiet week for trade; being broken by the Christmas holiday and also by stormy weather. Receipts have been liberal and the stocks on the tracks have increased slightly. We reduce quotations on fancy hay in large bales to $15.00 per ton. Other grades quiet at quotations.

Rye straw firm with good demand.

H. F. WILSON,
WIRE BALE TIES,
458 WEST 38th STREET, New York.



HAMMOND'S
CELEBRATED
Calumet Oleomargarine

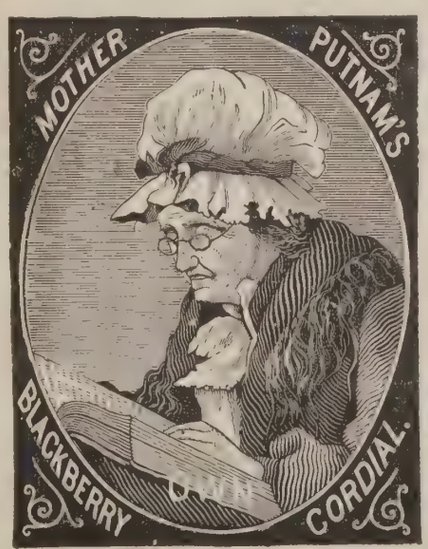
Strictly pure, cheap and healthful.
Ask your grocer for it.
Put up in packages of all sizes, also prints and rolls.

C. H. HAMMOND CO.,
607 to 615 THE ROOKERY,
CHICAGO.

Also offices at Boston, South Omaha, Neb., and Hammond, Ind.

40 COUPON OFFERS
and our large Illustrated Catalogue of SCROLL SAWS, Tools, Designs, and 30 Cts. WORTH of *full size* SCROLL SAW DESIGNS, sent FREE for 10 Cts. in stamps to pay postage.
JOHN WILKINSON CO., 269 State St., Chicago.

NATURAL MINERAL PURGATIVE WATER.
From the Springs of
VILLACABRAS.
Prescribed by the Highest Medical Authorities.
Stronger effects than any other under smaller volume. No smell—no repulsive taste—no after-constipation—no gripes. As a daily laxative it can be taken, either pure or mixed with milk, tea or broth.
Sold by all Good Druggists.



C-U-R-E-S
DIARRHŒA, DYSENTERY,
MALARIA,
all ailments of the bowels. Is an anti-dyspeptic, and a DELICIOUS INVIGORATIVE. Leading Physicians prescribe it for ADULTS AND CHILDREN. *FOR SALE* by Druggists and dealers.
RHEINSTROM BROS., DISTILLERS OF FINE LIQUEURS, 54, 56, 58, 60, 62 E. 3rd STREET, CINCINNATI, O.



GOLD MEDAL, PARIS, 1878.



W. BAKER & CO.'S
Breakfast Cocoa
from which the excess of oil has been removed,
Is Absolutely Pure and it is Soluble.

No Chemicals
are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

THE GREAT AMERICAN TEA COMPANY

LADIES

GET UP ORDERS.
Entire New Departure.
A HANDSOME PRESENT TO EVERY SUBSCRIBER.

THE GREATEST INDUCEMENTS EVER KNOWN TO INTRODUCE OUR NEW GOODS.

If you enjoy a cup of **Delicious Tea** send in your orders. 3½ lbs. Fine Tea by mail on receipt of $2 and this "ad". Beautiful premiums given away with $5 orders and upwards. The **most extraordinary bargains** ever offered, during the next thirty days. China Tea Sets and Lamps with $10, $15 and $20 orders to introduce our excellent **New Crop Teas.** Formosa and Amoy, Oolong, Congou, English Breakfast, Japan, Imperial, Young Hyson, Gunpowder, Sun Sun Chop and Mixed. Good mixed teas 20c. per lb. Headquarters in United States for Fine Teas. One pound of our tea will go farther than three pounds of trash. Thirty years' national reputation for selling **Pure Goods Only.**

THE GREAT AMERICAN TEA COMPANY,
P. O. BOX 289. 31 and 33 Vesey Street, New York.

Be progressive and keep abreast of the times. Avoid dyspepsia by using **Lard Compound** and **Cottolene,** a substitute for lard.

The highest medical authorities pronounce them healthful; and expert cooks commend them.

Our **Clairette** brand of cotton oil soap is the purest and best laundry soap in the market; as pleasant to the hands as genuine castile.

N. K. FAIRBANK & CO.,
CHICAGO AND ST. LOUIS.

We shall be glad to supply our readers with any periodical published at club rates.

Send us a postal naming periodical and we will quote you prices.

ANALYST PUBLISHING CO.,
19 Park Place, New York.

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,
HOWARD STREET, BOSTON, MASS.

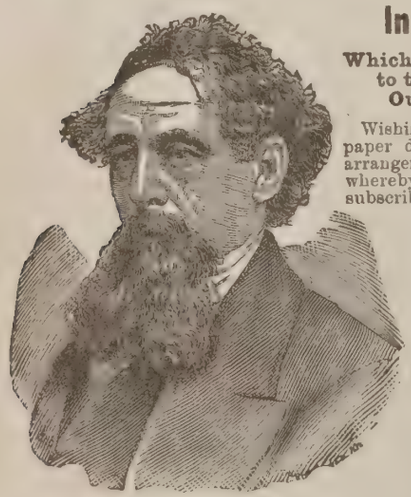
GRAND PREMIUM OFFER!

A SET OF THE

WORKS OF CHARLES DICKENS,

In Twelve Large Volumes,

Which we Offer with a Year's Subscription to this Paper for a Trifle More than Our Regular Subscription Price.



CHARLES DICKENS.

Wishing to largely increase the circulation of this paper during the next six months, we have made arrangements with a New York publishing house whereby we are enabled to offer as a premium to our subscribers a **Set of the Works of Charles Dickens,** in **Twelve Large and Handsome Volumes,** with a year's subscription to this paper, for a trifle more than our regular subscription price. Our great offer to subscribers eclipses any ever heretofore made. Charles Dickens was the greatest novelist who ever lived. No author before or since his time has won the fame that he achieved, and his works are even more popular to-day than during his lifetime. They abound in wit, humor, pathos, masterly delineation of character, vivid descriptions of places and incidents, thrilling and skillfully wrought plots. Each book is intensely interesting. No home should be without a set of these great and remarkable works. Not to have read them is to be far behind the age in which we live. The set of Dickens' works which we offer as a premium to our subscribers is handsomely printed from entirely new plates, with new type. The twelve volumes contain the following world-famous works, each one of which is published *complete, unchanged, and absolutely unabridged:*

DAVID COPPERFIELD,
MARTIN CHUZZLEWIT,
NICHOLAS NICKELBY,
DOMBEY AND SON,
BLEAK HOUSE,
LITTLE DORRIT,
OUR MUTUAL FRIEND,
PICKWICK PAPERS,
BARNABY RUDGE AND CHRISTMAS STORIES,
OLIVER TWIST AND GREAT EXPECTATIONS,
THE OLD CURIOSITY SHOP AND THE UNCOMMERCIAL TRAVELER,
A TALE OF TWO CITIES, HARD TIMES AND THE MYSTERY OF EDWIN DROOD.

The above are without question the most famous novels that were ever written. For a quarter of a century they have been celebrated in every nook and corner of the civilized world. Yet there are thousands of homes in America not yet supplied with a set of Dickens, the usual high cost of the books preventing people in moderate circumstances from enjoying this luxury. But now, owing to the use of modern improved printing, folding and stitching machinery, the extremely low price of white paper, and the great competition in the book trade, we are enabled to offer to our subscribers and readers a set of Dickens' works at a price which all can afford to pay. Every home in the land may now be supplied with a set of the great author's works.

OUR GREAT OFFER

TO SUBSCRIBERS

TO THE

AMERICAN ANALYST.

We will send the **ENTIRE SET OF DICKENS WORKS,** *in* **TWELVE VOLUMES,** *as here described, all postage prepaid by ourselves, also* **THE AMERICAN ANALYST** *for* **ONE YEAR,** *upon receipt of* **$1.50,** *which is only* **50** *cents more than the regular subscription price of this paper.* Our readers, therefore, practically get a set of Dickens' works in twelve volumes for only **50** cents. This is the grandest premium ever offered. Up to this time a set of Dickens' works has usually been $10.00 or more. Tell all your friends that they can get a set of Dickens' works in twelve volumes, with a year's subscription to **THE AMERICAN ANALYST** for only **$1.50.** Subscribe now and get this great premium. If your subscription has not yet expired, it will make no difference, for it will be extended one year from date of expiration. We will also give a set of Dickens', as above, free and post-paid, to any one sending us a club of three yearly subscribers.

ADDRESS:

THE ANALYST PUBLISHING CO.
No. 19 PARK PLACE,
NEW YORK.

Tabasco Pepper Sauce

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced, by connoisseurs, to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY,
NEW IBERIA, LA.

For Sale by all Wholesale Grocers.



All New Subscriptions sent now will be good until January, 1892.

NATRONA BI-CARBONATE OF SODA.

(ABSOLUTELY PURE.)

The nature of the raw material from which NATRONA BI-CARBONATE OF SODA is made—viz., kryolith, a mineral containing *pure sodium*—insures a purity and uniformity of product which cannot be obtained from any other known material. In making BI-CARB. SODA from any other raw material, the use of sulphuric acid is a necessity, but none is used in any part of the process of making NATRONA BI-CARB.; hence its entire freedom from the slightest trace of arsenic, which is always present in ordinary soda. Its absolute purity and entire freedom from all traces of *sulphate of soda*, common salt and other impurities, render NATRONA BI-CARB. NEARLY TASTELESS, and being bolted through the finest bolting-cloth, insures the finest stage of division.

To these indisputable facts the attention of CONSUMERS of soda is specially called. They are IMPORTANT, and should influence both those who use and those who sell soda, to buy and sell NONE BUT THE BEST.

The NATRONA BI-CARB. Soda is kept in stock by almost every wholesale druggist and grocer throughout the United States, of whom it may be ordered.

Natrona Bi-Carb. Soda is unequaled by any other brand of English or American Manufacture.

PENNA. SALT MANUFACTURING CO.,
NATRONA CHEMICAL WORKS. PHILADELPHIA, PA.

ESTABLISHED IN LONDON, 1831.

DEAN'S PATENT

Ardenter Mustard

I TELL YOU DEAN'S ARDENTER IS THE VERY BEST.

YOU CAN GUARANTEE THAT THE ARDENTER MUSTARD

WILL GIVE PERFECT SATISFACTION.

ARDENTER TRADE MARK MUSTARD

This Mustard is Superior to any manufactured both for table and sick room

W. G. DEAN & SON,
361 & 363 WASHINGTON STREET; 84, 86, & 88 NORTH MOORE STREET, N.Y.

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY
ACKER, MERRALL & CONDIT, and PARK & TILFORD.

"BILLET"

are

Carefully Selected

French Sardines,

Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS.

DR. PRICE'S CREAM Baking Powder

Most Perfect Made

A Pure Cream of Tartar Powder—
Superior to every other known.
Used in Millions of Homes—40 Years the Standard.
Delicious Cake and Pastry, Light Flaky Biscuit, Griddle Cakes
Palatable and Wholesome.
No other baking powder does such work.

Vigoral

FOR

STRENGTH, NOURISHMENT AND REFRESHMENT.

PREPARED BY

ARMOUR & CO.,

CHICAGO,

From their celebrated EXTRACT OF BEEF, further strengthened in muscle-forming constituents by the addition of pure beef in powdered form.

Vigoral is seasoned ready for use and makes a delicious hot drink for cold weather.

SWIFT'S

CHOICE

Chicago Dressed Beef

AND

MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,

UNION STOCK YARDS,

CHICAGO, ILLS.

GLENN'S SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

Beware of Counterfeits.

Wholesale Depot,

C. N. CRITTENTON,

115 FULTON STREET,

NEW YORK.

The Standard of Excellence.

KINGSFORD'S

OSWEGO

Pure and Silver Gloss



STARCH

KINGSFORD'S

OSWEGO CORN STARCH

FOR

Puddings, Custards, Blanc-Mange, Etc.

THE PERFECTION OF QUALITY.

WILL PLEASE YOU EVERY TIME.

Always ask your Grocer for these goods.

See our Club Offer on page 10.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 2. NEW YORK, THURSDAY, JANUARY 8, 1891. WHOLE No. 202

American Analyst,

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - - $1 per year.
Single Copies, - - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.

Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.

Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,

H. LASSING, M. D., } *Editors.*
T. P. McELRATH, }

No. 19 Park Place, New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to

THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

Domestic Dietetics 17
Editorials 13
Shall We Make Pure Beer? The Electric Motor of the Future; Oleomargarine Triumphant; Champagne from Russia.
Eyesight, Risks to 16
Glycerine 15
Holiday Toys 14
Hay Exchange Official Bulletin 20
Microbes and Longevity 16
The Shekel 17

SHALL WE MAKE PURE BEER?

The bill introduced into Congress last session, and discussed by the AMERICAN ANALYST at the time, to impose a special tax upon and to regulate the manufacture, sale, and importation of adulterated malt liquors, is again before the Ways and Means Committee of the House, and the maltsters on one side and the brewers on the other are preparing for a vigorous contest over it. This bill should be of sentimental interest, at least to all drinkers of beer. It provides, in effect, that beer which may contain any other ingredient than barley malt, hops, water, and yeast, shall be sold in stamped packages, to indicate that it is not made of these ingredients. The contention of those who favor the bill is that beer cannot be pure which contains anything except these articles. On the other hand, the brewers are quite as positive in asserting that beer need not be made solely of these articles in order to be both agreeable and wholesome. It happens that if beer were to be made solely of these ingredients it could not be put upon the market at the price at which it is now sold. The question for Congress to decide is whether the use of other articles in the manufacture of beer makes the drink injurious, and, if so, whether restraint should be put upon the brewers to compel them to make a pure malt liquor. In the discussions during the last session the opponents of the bill, including the various associations of brewers, confessed frankly that in the beer in common use glucose, corn, rice, and starch were freely used. They alleged that all of these substances were harmless and that the product of manufacture was generally satisfactory to the public, and that it could not be changed by the brewers without great inconvenience, and without producing a different character and quality of beer. On the other side, it was urged that, at best, these foreign substances were adulterants, and a good deal of testimony was offered to show that they rendered beer unwholesome and poisonous. Almost everybody who drinks beer is aware that there are extensive importations of beer into this country from Germany every year, and that the imported beer sells at a price much higher than the domestic article. The reason for this is to be found perhaps in part in the taste of those who drink beer, for the use of beer appears to admit of gradations of taste much in the same way as the use of tobacco. Many drinkers no doubt prefer the German beer because of the peculiar flavor of water used in different breweries in that country. Similar preferences exist in regard to various makes of beer in the United States. There are many persons, however, who drink German beer because they are assured that it is made only of pure malt, and because they believe that the introduction of any other substance is unwholesome. Indeed, the German law-makers appear to be of that opinion also, and in various States of the German confederation the laws upon this subject are stringent. These are matters of fact, and the brewers do not attempt to dispute them. They do insist, however, that the beer made in this country satisfies the general public taste, and that since it is made of wholesome materials there is no reason why its ingredients should be changed by law. It would make a great difference to those who raise barley and who manufacture it into malt if such a bill should become law. The combined breweries of the United States sold last year about 30,000,000 barrels of beer. It is said, and is not denied, that nine-tenths of this beer was made of other ingredients than barley malt, yeast, hops and water. If the law were compulsory in regard to the use of these ingredients, there would be an increase of expense in the manufacture of beer. Since it is doubtful if consumers would be willing to pay more than the price now regarded as the standard for a glass of beer, the brewers or their immediate customers would find their profits considerably lessened as the alternative of this situation. They cannot see that there would be any gain in such a change of conditions, and they oppose a change, for this reason among others. The advocates of the bill are quite certain, however, that if a distinction could be made by law between pure malt beer and beer that was otherwise manufactured, public patronage would soon be extended to malt beer, and that in the course of time the majority of brewers would be forced, as a matter of business policy, into its manufacture.

THE ELECTRIC MOTOR OF THE FUTURE.

Mr. A. H. Chadbourne contributes to the New York *Electrical Review* some interesting views on the question of the future of electric traction. While referring to the fact that every electric street car line in this country that has been equipped and operated commercially has been a successful and a profitable investment, he dwells on the comparatively limited development of the mechanical as compared with the electrical details of the electric street car, and points to the higher degree of economy that will be attained by the electric motor, in which respect it is destined to be superior to all other systems, when its construction is carried out more in accordance with the best mechanical knowledge of the present day. The special directions in which the future progress of electric traction will assert itself, Mr. Chadbourne thinks, will be, first, the use of a longer car, with one end devoted to the motor. The cars may have at least six wheels, and will ride easily and smoothly, and round any curve with ease, as the weight will be fairly distributed on the rails, and the forward truck will be movable. The motor will be in a dry and warm room, and the motor man will have a close, direct, unhampered supervision of his machine at all times. The natural result of this will be a material reduction in depreciation, as well as a reduction to a minimum of the cost of operation. Signs are already at hand that motors of slow speed will be used, and that noiseless gears will replace the clattering and cumbersome gears of to-day. Improved devices will allow the armature to run free when the car is at rest, gearing will be dispensed with, and the armature will be placed directly about the car axle. When this is done, and Mr. Chadbourne is of opinion that it will be accomplished before another decade, "the steam locomotive must give away to advanced ideas, and we shall run through our streets and over the country at any desired speed, without smoke, cinders or fire, and travel will then indeed be a luxury."

OLEOMARGARINE TRIUMPHANT.

Everything comes to him that waiteth for the right thing to happen. Now the oleomargarine interest is likely to have an innings, a United States Court having decided that its interstate transportation is a legitimate commercial traffic. In Philadelphia, on December 24, in the case of the Commonwealth against George Paul, the Philadelphia agent of Braun & Fitts, of Chicago, manufacturers of oleomargarine, as to whom a special verdict by agreement of counsel was rendered for selling oleomargarine, Judge Reed delivered a decision, in which he holds that the State law forbidding the sale of oleomargarine in the packages as originally imported from

another State is unconstitutional. Judge Reed, after an extended opinion, sums up his conclusions as follows: First—The right of State to enact police laws—at least, when such laws prohibit the sale of articles which, without prohibition, would be legitimate subjects of commercial interchange—is subordinate to the power of the United States to regulate commerce between the States. Second—The right to sell in the original package goods imported from another State, if the latter are merchantable and legitimate subjects of trade and commerce, is guaranteed by the United States, and, though it can be regulated, it cannot be prohibited by any State. Third—The United States has the paramount right to declare what goods are merchantable and what regulations of their sale are reasonable. Fourth—By an act of Congress the United States has declared oleomargarine to be a merchantable article and has regulated its sale. Fifth—The Act of Assembly of Pennsylvania of May 21, 1885, does not regulate, but prohibits the sale of oleomargarine; therefore, such act cannot apply to the goods described in the special verdict, and the defendant is not guilty as he stands indicted.

CHAMPAGNE FROM RUSSIA.

A wine dealer of Odessa has conceived the idea of manufacturing champagne out of Caucasian, Bessarabian and Crimean grapes. He put himself into communication with manufacturers of that article in Champagne, France, and succeeded in interesting in his undertaking some of the wealthiest among them. A careful trial was made of the Russian grapes, and it was found that they would yield the finest qualities of champagne. Accordingly a company of French wine producers has been formed, a large factory with all the necessary machinery for the producing and bottling of champagne has been built in Odessa, and experts have been engaged. The whole outfit of the factory was imported from Champagne, France; even the first million of bottles were ordered from there. But if it will be found that bottles strong enough can be made in Russia, a special glass factory will be built in Odessa to supply the requirements of the new company.

HOLIDAY TOYS.

WHAT THEY MAKE IN FRANCE AND HOW THEY MAKE THEM.

One of the largest toy dealers in Paris is named Raymond. An American visitor, shortly before Christmas, inquired of him whether there was anything specially new in his line of trade. "Oh, yes," he answered, taking up a doll from the counter, "there is always something new springing up in toydom, especially at this Christmas season of the year. Here, for instance, is one of our latest novelties; it is the talking doll, which Mr. Edison, your great inventor, has recently introduced. Its linguistic accomplishments surpass those of our ordinary dolls, whose vocabulary is limited to the words 'papa' and 'mamma.' How it works? Well, you see, each puppet contains a concealed phonograph that reproduces as many as thirty words, which have been recorded upon a narrow metal cylinder. This wheel is revolved by means of a spring, and the sounds are delivered by the usual method, the mouth-piece being hidden under the clothing of the doll, just below the neck. The effects produced are fairly satisfactory, but the illusion would be more complete if the apparatus were applied to stuffed parrots, for there is a marked tendency to a croak in the tone of the phonograph. It is, however, too expensive an article to find ready buyers in every household. Speaking of dolls, have you noticed the great change that has come over our French dolls within the last few years? For a long time the English taste was better than ours. An English doll is always an imitation of a child, while ours was the counterfeit of a very much over-dressed and ultra-fashionable young lady. Our object was to give the budding mind a toy which would serve as a model of fashion; but this was a mistake, as the doll was often nothing else than merely out-of-date samples of the follies of grown-up people. That series of dolls you see there in the window, fat and chubby little creatures in their chemisettes, took the prize at the show last year on the Champ de Mars; they are known as the bébés parlants, or speaking babies, and are both articulating and unbreakable. Then, again, they are French, the work of French hands, and this to-day is a great point with purchasers. The public will no longer buy those stiff, staring, ungraceful dolls with white leather or salmon-colored bodies, tightly stuffed with bran or hay; they are all of German make, come from Nuremberg, and are as 'dull' as they can be. Nobody wants them. Some years ago all the dolls' heads in hollow porcelain, with or without real hair, came from beyond the Rhine. Many French manufacturers of cheap earthenware have since the war gone into this branch of trade, and turn out charmingly pretty heads, which are a great improvement on the old Prussian trash, which delighted our mothers and grandmothers in their juvenile years. Sculptors of acknowledged merit are not ashamed to furnish models of poupées à têtes ceramiques, or dolls with porcelain heads, the best class of which have, in leaving the potters' hands, no skull. This want is supplied by the insertion of a cork, to which a wig is attached. The work-girls employed in the manufacture of these dolls earn a good livelihood. They get on an average three francs, or sixty cents a day, which is considered fair wages for a woman in Paris. One of the most noted manufacturers of French dolls is M. Jumeau, who opened his factory in Montreuil in 1878 and now turns out 500 bébés in a day, or upward of 180,000 in a year. He employs a thousand hands, and not only supplies to a large extent the French and European markets, but exports his wares to China, Australia, Java and New Zealand. The dolls' clothes are the work of milliners and doll makers. The sizes of our dolls being all numbered, and their shoes, clothes and hats numbered to correspond, the little girl who requires a new doll's mantle or pair of shoes has only to go to the toy shop and state the number of her doll to obtain something exactly fitting it. Our great quarrel with Germany for some time past arose less from the loss of Alsace and Lorraine than on account of the playthings that are sold in Paris. That a child's toy should be made a bone of contention between two powerful nations may not at first sight seem clear. But when I tell you that, until quite recently, large quantities of the cheap toys sold in France were manufactured in Prussia, you will at once understand the cause of our dispute. Why not undersell the importers of these wares? Well, that is exactly what we were aiming at and what we have done. Nuremberg was formerly the great storehouse for toys. French industry nowadays has cut Nuremburg clean out of the market, and even Mannheim has been superseded. The wood and bone carvings of Saint Claude, in the department of the Jura, have in part helped to nonplus the latter. We do not object to English toys, for there are no better and cheaper rocking-horses, toy engines and steamboats than those from over the channel. A large industry developed in England also is the manufacture of india-rubber toys. 'Old England' has opened within the last three years a large shop on the boulevards, where at Christmas a genuine English display is to be seen. The English productions are, however, almost wholly confined to a few special types of goods. England excels not only in the articles I have just mentioned, but in balls of every kind and in painted wooden marionettes, to say nothing of the instruments required for her national games. A hundred years ago, when tennis was still the favorite pastime of French noblemen, a racquet, to be good must have borne the mark of Blois upon it; to-day such a thing as a French-made racquet is not to be found; and though croquet was adopted here as soon as it was discarded in England, we are still obliged to get all our croquet boxes from over the channel. We, however, surpass England and every other country in the making of dolls and dolls' dresses, in fashioning animals out of cardboard, and in all mechanical toys; that is, toys which are worked by some simple contrivance other than steam. Our kitchens, grocery stores, stables, forts, bedroom arrangements, on a small scale for boys and girls, are another specialty. The dolls are sometimes placed in a sort of tableau arrangement, every part of which is minutely perfect. For instance, here is a drawing-room in which the mimic upholstery is of the richest description; the toy ladies are supposed to be drinking coffee from a diminutive set of real Sevres porcelain; the clock upon the mantle shelf has a tiny mechanism that makes it go; and the piano-forte, small as it appears, is no dumb show when the keys are touched. Toy boats, which in their construction go through a dozen different hands, are very cheap, though the whole of the work is done by hand. In one Paris manufactory out in the Marais quarter, where most of the Paris toys are made, as many as ten thousand sailing boats are turned out every year. Each country, no doubt, has its own specialty in the fabrication of playthings; so that all Europe, in a way, must be laid under contribution to stock a good toy shop. Until quite recently the best leaden soldiers came from Saxony, the best humming-tops from Holland; northern Italy makes squeaking Punches and drumming rabbits, while Switzerland and Southern Tyrol have a practical monopoly of animals carved out of wood. The manufacture of these latter toys may be considered a monopoly of the flourishing little village of St. Ulrich in Southern Tyrol. I have been there. It is the great storehouse from which the chief toy traders draw their inexhaustible supplies. The art is said to have been introduced into the valley about the beginning of the last century. As soon as the boys and girls can handle a knife they begin to carve the form of some animal or toy which is the peculiar line of the family. This is one of the odd facts in connection with the trade. Each family has its own special line, from which it does not swerve. Some carve, some paint, some gild. The painters often work only in one particular color. They use no models, and work entirely by rule of thumb. Long practice enables them to turn out the tiny objects, every one as much alike as if it had been cast in a mould. Some will cut out lions, tigers, camels and elephants; others sheep, oxen and deer; others, again, chiefly birds; while another family will produce the queerly-dressed men and women popularly supposed to represent Noah and his seven human companions. There are several warehouses where the articles thus made are sold; but there are two leading merchants who act as wholesale exporters, buying the carved work either from the people themselves or from minor agents, who realize a small profit by acting as middle-men. It is the funniest place I have ever seen. Here all the numerous toys of that class mostly spring into being. Noah's arks, armies of wooden soldiers, on horseback and on foot, farmyards of every size, dolls' furniture of every shape, sets of teacups and saucers, and and all kinds of domestic utensils; little wooden horses, little wooden carts, etc. The trees from which the things are made are a soft pine, very easily worked. They grow in abundance in the district. So cheaply are these toys made that animals about five inches in height, and very artistically if roughly carved, are now sold in Paris at a cent apiece. Of course we cannot compete with a market like this, nor shall we ever attempt to do so. A large number of our cheap toys are, however, manufactured in French prisons, and nearly all those sold in the public bazaars are from this source. One of our most useful toys this year comes from America. It is the Anchor Stone building box. But our children have long since enjoyed similar articles. We have, for instance, the geographical model and the box of architectural solids. The latter is a great improvement upon the boxes of common wooden bricks usually sold, as it

includes a great variety of other forms required by youngsters in their amateur building operations. Parents also do well in obtaining the geometrical and drawing solids and mechanical models. Toys should be educational. Not that a child should look upon his play as a lesson, or it will altogether cease to be play. Certain toys, if well selected, will impart a vast amount of instruction without any mental strain. Give a tot five or six years old a box of these constructive blocks, and he will puzzle over it for days, try every sort of arrangement, and unwittingly acquire some important mechanical methods. What is true of the box of bricks is also true of a number of other toys. Of these I may mention magnetic fish, hydrostatic toys with water wells and fountains, the kaleidoscope, the magnetic wheel, and many more. All these involve scientific laws which a child may understand with little difficulty. A genuine bona fide cooking stove is an excellent toy to put into the hands of a young girl. Pretending to cook is largely played at by children of all countries. These stoves, though on a small scale, are made large enough to be capable of dressing a small dinner. By a course of instructions in play-cooking, or by simply imitating the more serious work of the 'cordon bleu,' a most useful game may be introduced into many households. India rubber balls are now in a measure replaced by an article manufactured out of celimose, which bounds beautifully and is sold dirt-cheap. The navigable balloon, which doesn't navigate at all, with its model aeronauts, the orchestrion and the torpedo boat, are still favorites. Punch, of course, still reigns supreme in the innocent hearts of little monsieur and mamselle. He is aged, he is hideous, with long, hooked nose, and deeply furrowed visage. He wears a grotesque costume, made up of many-colored patches. His legs are twisted, and he has a formidable hump on his back, while his breast bone protrudes in most ungainly fashion. Yet our French children delight in his deformity, and every boy and girl you meet hugs Punchinello in a close embrace. Then there is the 'bossu guéri'—the hunchback cured. This is a great favorite among the people. It represents a doctor in cocked hat and scarlet coat, armed with a carpenter's plane, hard at work planing down his patient's hump. The work begins, the patient, laid upon the carpenter's bench, utters a plaintive squeak each time the tool is placed over his deformity, at which the children go into a fit of laughter. Politics are finding their way into this season's toys. The crushing defeat of the Boulangists has brought out again a brass gimcrack entitled 'What has become of him?' Him, of course, is the general. He stands in full military uniform by the side of a large soup tureen, which he contemplates with a chop-fallen countenance. Soon as the question which gives its name to the toy is put, you touch a spring in the handle, when France's whilom hero topples over and plunges head-foremost into a huge piece of porcelain ware. Boulanger's partizans retaliate with a mechanical toy too expensive to be sold by the hawkers. It is a long, thin, blond figure of a whiskered lawyer, dressed in the black gown of a magistrate, with spectacles on his nose and a glass of water on the desk before him. This is the redoubtable M. Quesnay de Beaurepaire, the general advocate who took such a leading part in the prosecution of the general before the high court of justice. He is represented in the act of reading the famous indictment which brought about the condemnation and sudden departure of the former friend of the Duchesse d'Uzes."

GLYCERINE.

ITS CHARACTER, DERIVATION AND CHEMICAL COMPOSITION.

Many years ago, in an obscure mining village in Sweden, the apothecary, while making lead plaster in the ordinary way by heating olive oil with litharge and water, chanced to notice that the liquid which was mingled with the pasty lead compound had a strangely sweet taste. On further investigation he found that the sweet taste was caused by the presence of an oily liquid which was dissolved in the water. No such substance was described in the books of the day. Evidently a discovery had been made. The discoverer, although poor and with slight advantages of education, was a man of more than ordinary ability. Already he had attracted the attention of the learned men of the day by publishing his quaint chemical theories of combustion (*Ueber die Luft und das Feuer*); nor was this his first discovery of a substance hitherto unknown to science. We can easily imagine, then, with what enthusiasm Scheele—for that was his name—plunged into the study of the strange liquid in the occasional respite that was granted him from the pestle and the dispensing counter. He soon found that the sweet substance was not the product of olive oil alone, but that other oils and fats would yield it under the same treatment; so he named it the "sweet principle of fats," or "oil-sugar." Soon after, his work was cut short by death. More than a century has passed since Scheele's discovery yet it is scarcely fifty years since "oil-sugar" was found to be of practical value, except, perhaps, for a limited use in medicine. Many famous chemists had taught the world much as to its nature and production, had given it the more formal name of glycerine, derived from a Greek word meaning sweet, but to the every-day world the substance remained only a curiosity. Nowadays, every one is familiar with the clear, thick liquid so commonly used for toilet purposes. Its soothing and softening effect on dry or inflamed skin is the quality by which it is best known in most households; but few people have any idea of the variety of purposes for which glycerine is used. This will not seem strange when we find how many valuable properties are possessed by this remarkable liquid. Among the most striking of these are its great solvent power, its chemical stability, and its sweetness. Besides these, it is not indigestible, will not evaporate, and, owing to this and its hygroscopic qualities, will prevent drying and hardening of materials with which it is mixed. These peculiar qualities make it most valuable in the preparation of medicines and various food-products, as preserves and mustards; likewise in beer, wines, and other bottled goods, where it is said to act as a preservative. The fact that strong solutions of glycerine and water will not freeze in the lowest winter temperatures has its use in our "wet" gas-meters. In short, the list of purposes to which this most useful liquid is put is almost exhaustless. Among the more important industries in which it is used are vulcanizing india-rubber, silvering and gilding glass, dressing leather for kid gloves, preserving anatomical and botanical specimens, and the manufacture of what is, perhaps, the most powerful explosive known to science—without whose aid some of the grandest triumphs of modern engineering would have been impossibilities—nitro-glycerine. Scientifically considered, glycerine is most interesting. Mention has already been made of many of its physical characteristics. In a pure state glycerine is somewhat more than a fourth heavier than water (1.269). After long exposure to a freezing temperature it will deposit rhombic crystals resembling those of sugar candy. Strangely enough, when quickly cooled to very low temperature—40 deg. Fahr.— it forms a gummy mass which will not harden nor crystallize. Indeed, it was not till 1867 that it was thought possible to crystallize it. The boiling point of glycerine is about 490 degrees Fahr. At this point it decomposes slightly. As already stated, glycerine will not evaporate at ordinary temperatures, but at the boiling point of water (212 degrees Fahr.) there is a perceptible loss. Pure glycerine will burn readily, if first heated to about 300 deg. Fahr., giving a pale-blue flame similar to that of alcohol. Heated intensely it decomposes into acrolein, a most pungent-smelling compound, one whiff of which is usually sufficient to fix it indelibly on the memory. To the chemist glycerine is an alcohol, being, like other alcohols, a hydrate of an "organic radical"—that is to say, the hydrate of a combination of carbon and hydrogen which forms salts as if it were a metallic element. From its chemical behavior glycerine can be considered a "tri-atomic alcohol," or tri-hydrate, with the formula $C_3H_5(OH)_3$, on the same analogy as sodic hydrate, NaOH, or calcic hydrate, $Ca(OH)_2$; the group represented by the formula C_3H_5 acting as a base and known chemically as glyceryl or propenyl. Just as we can make salts of a metal from the hydrate, so can we make salts of glyceryl in essentially the same way, although the methods employed are different. Nitro-glycerine, so-called, is one of these salts of glyceryl, being an impure tri-nitrate ($C_3H_5[NO_3]_3$). By far the most important salts of glyceryl are oils and fats. The majority of these are salts of glyceryl and organic acids. The principal of these acids, out of many which are present in our common fats, are stearic, oleic and palmitic acids. We now understand how it was that Scheele made his glycerine. We remember that olive oil was the basis of his lead plaster. This oil is, in the main, glyceryl oleate ($C_3H_5[C_{18}H_{33}O_2]_3$). Hence the reaction between the lead and the oil and water can be expressed by the following equations:

$$2\,C_3H_5(C_{18}H_{33}O_2)_3 + 3\,PbO + 3\,H_2O$$
Glyceryl oleate. Litharge. Water.

$$= 2\,C_3H_5(OH)_3 + 3Pb(C_{18}H_{33}O_2)_3$$
Glycerine. Lead oleate (lead plaster).

For many years this reaction was the basis of the manufacture of glycerine. Cheaper fats than olive oil, of course, were used, while traces of lead in solution were removed by sulphuretted hydrogen. As the use of glycerine became more extensive, there arose the necessity for a cheaper method of production. Attention naturally was directed to the spent lye of the soap manufacturer, for soaps are sodium or potassium salts, principally of stearic acid, made by a reaction similar to that used in making lead plaster, but substituting caustic alkalis for litharge. By the method of soap manufacture, however, the liquors containing the glycerine are so contaminated by alkalies and salt, and are so diluted, that until recently it has not paid to recover the glycerine. A process, which has proved most profitable, has been invented to decompose animal fat directly into stearic acid and glycerine, by subjecting it to the action of superheated steam, at a temperature of about 300 deg. Fahr. The resulting glycerine is concentrated and purified by steam distillation, while the stearic acid, which much resembles wax, and in no way answers to our ordinary conception of an acid, is in great demand for candles. In this way thousands of tons of glycerine are made yearly, not to mention the immense number of excellent candles which are also products of the process.—*Popular Science News.*

AFRICAN DIAMONDS.—Geologists have proved that the diamond mines of South Africa are situated in vents or chimneys varying from 70 to 1,500 feet in diameter.

FUNGOID AFFINITY.—It has recently been found that certain fungoid growths have the power of removing gold from water containing it in suspension.

POTATO ALCOHOL.—A French chemist has shown that the potato called the "Richter imperator" is well fitted for the production of alcohol by distillation on a commercial scale, and that the "draff" that results is readily eaten by cattle.

MILITARY TELEPHONES.—All the forts and military establishments of Belgium have been connected with Antwerp by telephone. Special precautions have been taken to prevent an enemy tapping the wires in war time. The instrument used is a Dejongh microphone

CHANGING LATITUDE.—Observations seem to show that a decrease in the earth's latitude is in progress, implying an alteration in the direction of the earth's axis. The fluctuation is thought to be due to a minute's oscillation, caused by some changes in the internal wars of the earth.

MICROBES AND LONGEVITY.

HOW LONG MAY MEN HOPE TO LIVE?

The question of the prolongation of human life is to be made to depend in great part on the success with which the individual resists the microbes that infest his body. This resistance will depend partly on the precautions taken and partly on the fact that the bacilli find the tissues of some persons more suitable as a lodgment, and sweeter as nutriment, which permits of their taking possession of them in greater numbers and more speedily accomplishing their deadly work. We have in California the San Francisco microbe, the Oakland microbe, the Berkeley microbe, which the professors of the University of California resist with tolerable success, owing to their superior wisdom, and those which flourish in the San Jose, Salinas, San Joaquin and Sacramento valleys. The microbes propagate and develop each after its kind, like the beasts of holy writ, finding an ever-increasing aliment in the rapidly augmenting population of the State. In their preference for some persons rather than others they resemble the mosquito, which lets a certain category of individuals severely alone, while in revenge for the exceptions it plunges its venomous bill with more extreme virulence and tenacity into others. Are we to infer that the microbe of the Salinas valley is less dangerous because it permits certain persons to live to the age of 150 years? If this is the case, we may yet live to see the land boomers of that favored region issue prospectuses containing such phrases as these: "Come to the Salinas valley, for here the Koch bacillus is unknown, and the microbe of Pasteur vainly attacks the human system;" or, "In this land, favored by divine Providence, the golden age, the age of the patriarchs, the age of Methuselah is not an idle dream, for here, owing to the absence of parasites, which are the universal causes of disease, death has lost its sting," etc. This is not such an idle dream as many persons think, for there are scientists who encourage the idea that when the means of successfully combating the microbes are discovered, human life will be indefinitely prolonged. Some of these wise men even believe that the tales of the long-lived patriarchs told in Bible history are not so very absurd, and that mankind, by the aid of medical science, may yet be able to repeat the same experience. Prussian statistics demonstrate that of every 100,000 male children born in that country 77 per cent. in round numbers live one year, 62 per cent. 10 years, 60 per cent. (nearly) 20 years, 54 per cent. 33 years, 48 per cent. 40 years, 40 per cent. 50 years, 30 per cent. 60 years, 17 per cent. 70 years, nearly 5 per cent. 80 years, one-third of 1 per cent. 90 years, and fifteen thousandths of 1 per cent. 100 years. The mean term of life is estimated at 35 years for the male, and 38 years for the female sex. Prussia, it should be noted, is not par excellence the country of microbes, a great part of its area being sandy barrens, as discouraging to the little animals as the plain of Mamre inhabited by the patriarchs, and the rest a series of lakes and marshes, where they may procreate to a certain extent during the brief summer, only to be inevitably killed by a long and rigorous winter. According to a German writer, the age of Methuselah, given in the Bible at 969 years, has been miscalculated. The term "years," in his estimation, should be interpreted seasons, which would reduce the period of this patriarch's existence to 240 years—which it is by no means impossible he might have attained in those days of heroic build and primitive simplicity of diet and personal habits. Allowing for all possible errors in the statistics of modern longevity, it seems to be quite within the limits of possibility that a person may live 200 years, since many are known to have passed 150. The case of Thomas Parr, the poor Shropshire peasant, who died at the age of 152 years and 9 months, is one of those most frequently mentioned. Had not the curiosity of the living caused his transportation to London, there is every reason to believe he would have lived several years longer. Parr was a very robust man. At the age of 101 he was put in the stocks for an offence against good morals. He married at 120 a widow who never realized his great age. At 130 he was still able to thresh grain with the flail—one of the most arduous of labors. At the time of his death his sight was slightly enfeebled, but his other senses were perfect. His body was dissected by Harvey, the celebrated anatomist, who found the heart and other organs in perfect condition, and no ossification of the cartilages, which is so common in old men. In 1670 a man named Jenkins died in Yorkshire, aged 169, who, at the age of 12, had fought at the battle of Flodden. Being called into court a short time before his death, to testify to an occurrence that had taken place 140 years before, he appeared accompanied by his two sons, one aged 100 and the other 102. Fishing was his favorite occupation up to the day of his death. There is quoted the case of St. Mungo, the founder of the diocese of Glasgow, who, according to the epitaph placed on the tomb, deceased at the age of 185. There are cases on record of persons dying at an age even more advanced, but the more remote they are in time the more difficult they are, naturally, of verification. The case of Methuselah is one that concerns the Jewish race, which, though more subject to physical infirmities, is longer lived than the race sometimes, though incorrectly, called Caucasian. It has been calculated at Frankfort, in Germany, where the Jews are numerous, that the mean duration of their life is 48 years, while that of the Christians about them does not quite reach 35 years. The physical peculiarities and personal habits of those who have died at an extreme old age merit attention. Owen Carollan, an Irish farmer who died at Meath in 1764, at the age of 127, had six fingers on each hand and six toes on each foot. Elspeth Walson, a Scotch woman who died at the age of 115, was a dwarf only two feet and three inches in height. In contrast with this singular case is that of Jacob Donald, a giant seven feet and two inches in height, who died near Cork at the age of 120 years. That a man may live long and work hard is illustrated by the case of Jean Maulmy of Brittany, in France, who died in 1757, aged 120. His neck was so short and his shoulders so round that when regarded from behind his head was invisible. A French woman who served seventy-two years in a menial capacity at the castle of Colemberg, in the northeast of France, was hunchbacked, a class of deformed persons that presents numerous cases of longevity. As a rule alcoholism abridges life for reasons independent of microbes. From the cases of 6111 hard drinkers, aged from 16 to 90, studied in England, it has been inferred that the mortality among the class is three times greater than among ordinary Englishmen. It is not to be inferred precisely from this fact that beer, wines and liquors used in proper quantities shorten life. Annibal Camoux, who died at Marseilles in 1760 at the age of 122, drank wine freely all his life. Grogres Kiston, who died at the age of 125, in Yorkshire, in 1764, was intemperate. Johanna Obst, who deceased in Silesia in 1825, at the age of 155 drank every day two glasses of brandy—large ones, of course. Philip Larroque, a French butcher, who lived to the age of 102, got drunk regularly twice a week. A French surgeon, Politiman, who lived in Lorraine and attained the age of 140, from 25 till his death got drunk regularly every evening. Another surgeon, who lived in the south of France, and died at 112, followed precisely the same mode of life, while the epitaph of an Irish farmer named Brawn, who attained the age of 120, records the fact that he never drew a sober breath in his life. Beer was his favorite tipple. There are similar cases of longevity among the coffee-drinkers, and yet two cups of good coffee contain one-fifth of a gramme of cafeine, a dose that a physician would not dare to exceed. Nevertheless, a woman living near Marseilles drank coffee from morning to night during a great part of her life, taking on an average forty cups a day, and yet lived to 114 years. It is recorded of other centenarians that coffee was their usual remedy for bodily ills. What is this but another phase of the relation of the nerves to vital force. It is hard to imagine microbes so hardy as to invest the body of any one whose tissues are thoroughly saturated either with alcohol or cafeine. It may be well to close with a word to smokers. A French savant who has investigated the cases of many centenarians declares that among them all he found only one addicted to the smoking habit.—*S. F. Chronicle.*

RISKS TO EYESIGHT.

A CAUTION AGAINST THE NICKEL-IN-THE-SLOT OPERA GLASSES.

Dr. F. Ogden Stout said, in the course of a conversation at the office of the Spencer Optical Manufacturing Company a few days ago: "The introduction of the drop-a-dime-in-the-slot opera glasses into the theatres has probably done more to injure the eyes of the users than any one thing. These opera glasses generally are worth about $18 per dozen, and for inferiority in finish and quality of lenses they cannot be surpassed. This, however is of not so much importance to the public as the injurious and dangerous diseases that may be taken from one user to the other. It is an acknowledged fact that a number of eye diseases may be contracted by bringing the eye in contact with towels, handkerchiefs or anything the afflicted may have used around the eyes. What, then, would be the effect, if to-night a person with such a disease uses one of these opera glasses, and a particle of the secretion adheres to the eye-piece, and to-morrow night it comes in contact with a healthy eye? Could not the infectious particle come in contact with a healthy eye as easily as it could be left by an unhealthy one? It is useless for me to answer these questions. In New York City children with eye diseases are prohibited from entering the baths for fear that the water will be contaminated and the diseases thereby conveyed to others; and although precautions are taken, scarcely a season passes without any epidemic among the great unwashed. But very few have heard of diseases caused by the use of the opera glass in the theatres. Why is this so? Because those becoming afflicted do not have a thought that an opera glass they have used is the cause. A physician will ask them if they have used towels or other articles that have been used by others with sore eyes, but he does not ask them about the use of an opera glass, and therefore the source of disease in a large number of cases is unaccounted for. One of the most serious of eye diseases that may be transmitted by a contagion is what is called by the medical profession mucopurulent conjunctivitis or catarrhal ophthalmia, a contagious inflammation of the conjunctiva or the thin membrane which covers the outer part of the eyeball and the inner side of the lids; it may be transmitted to a healthy eye by using any article that has been brought in contact with an eye so diseased. Professor Noyes, in his admirable work on the eye, says, in speaking of its cause: 'In a few instances it seems to be of spontaneous origin, but these are very rare—while in the vast majority of cases some source of contagion can be traced by communication from a similarly diseased eye by indirect contact through the fingers or handkerchiefs, towels, clothing or rags. A very minute quantity is sufficient. To show how contagious it is, he says, the mystery which sometimes attaches to the transmission of the inflammation to a healthy eye is less surprising, when it is known that the pus when diluted 1 to 1,000, still retains decided contagious properties. Drs. Fox and Gould, in their 'Compend' on the eye say, 'The chief cause is doubtless contagion. Caution about the use of towels, etc., must always be urged upon parents and those afflicted.' Trachoma or granulated lids is also an infectious disease of the eyes. Drs. Fox. and Gould say in their book on the eye that 'mal-nutrition, fatigue, bad ventilation, etc., may produce the infection spon-

taneously, but the greater number of cases arise from infection. I might go on and describe a number of diseases of the eye that are contagious, but it is unnecessary, as I have cited enough to illustrate, and those desiring a more thorough knowledge of this can be gratified by turning to any standard treatise for the diseases of the eye."

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

January.

MEATS.—Beef, mutton, ham, kidneys, liver, venison, sausage, pork.

GAME AND POULTRY.—Grouse, hare, pigeon, quail, chicken, duck, turkey, rabbit, geese.

FISH.—Bream, cod, crabs, eels, carp, flounder, halibut, herring, lobster, mackerel, mussels, oysters, perch, rock-fish, salmon, smelt, white-fish.

VEGETABLES.—Artichokes, beets, beans, cabbage, carrots, cauliflower, celery, garlic, lettuce, onions, parsley, parsnips, potatoes, shallots, spinach, squash, tomatoes, turnips.

FRUIT.—Apples, bananas, grapes, oranges.

PRACTICAL RECIPES.

SOFT CLAMS WITH SHERRY.—Use the plump part only of a dozen large soft-shelled clams. Put in a chafing-dish a pat of butter, and when quite hot add a dash of flour and cayenne to suit the taste; add the clams, and, when they are slightly cooked, add half a cup of sherry. Cover the dish and allow it to simmer five minutes: have ready three slices of toast, put four clams upon each slice, add a little of the hot sherry, and serve.

CHICKEN CUTLETS.—Skin a couple of chickens, bone the joints, all except the wings, and take out the breast-bone; flatten out the flesh, and season it highly with salt, pepper, cayenne, nutmeg and mace; dip it in beaten egg and cracker crumbs and fry a nice brown. Make a good brown gravy, and flavor it with a little grated lemon peel. Dish the cutlets and pour the gravy over them.

LEMON SAUCE FOR BOILED FOWL.—Simmer gently in two cupfuls of sweet cream the peel of a small lemon cut very thin, ten peppercorns, and a sprig of lemon thyme. When the cream tastes well of the lemon strain it, and thicken with two teaspoonfuls of flour rubbed into three of butter; boil up; pour the strained juice of the lemon in and stir well, but do not boil it again; add a little hot broth or gravy, season and serve.

FISH BALLS.—Pick very fine one cupful codfish, pare a bowlful of small potatoes and put them in a saucepan, with the fish on top of them; cover with boiling water and cook until they are done, probably about half an hour. Now drain off the water and mash the fish and potatoes together, then beat them up with a spoon until they are very light; add to them a tablespoonful of butter, a little pepper, and a well-beaten egg. Heat a kettle of fat until it is boiling; take a large spoon and put it first into the hot fat, and then take up a spoonful of the fish and drop it into the fat. Be careful not to get too many balls in the kettle at once. Cook them until they are a rich brown, and serve at once.

FIG CAKE.—Make some layers of cake with the following mixture: Three eggs, one cupful of powdered sugar, one cupful of baking powder sifted in three-quarters of a cup of flour. Beat the whites and yolks of the eggs separately, and add the whites the last thing, mixing them in lightly when the rest of the ingredients are well beaten together. Flavor with lemon and bake in jelly-cake tins. Make a filling as follows: Beat the whites of three eggs, and add to them sufficient sugar to make a good icing; chop up six fine figs, a handful of raisins and a little citron; squeeze half a lemon into this; stir the fruit into the icing and spread it on the cake layers, and put them together.

CHOCOLATE ICING.—Beat the whites of two eggs to a froth. Put six tablespoonfuls of grated chocolate, six tablespoonfuls of sugar, and a little hot water in a saucepan and heat over the fire, stirring all the time until the chocolate is smooth; take from the fire, flavor with vanilla, add the beaten whites, and it is ready to use.

BUTTER CAKES.—One quart sour milk or buttermilk, one teaspoonful baking soda, a little salt, one and a half cupfuls cold baked rice, two tablespoonfuls molasses, and flour enough to make a stiff batter; fry on a hot griddle for breakfast.

THE SHEKEL.

ITS MOST ANCIENT USE A WEIGHT AND NOT A COIN.

An evidently thoroughly informed writer in the *Journal of Commerce* discusses the question of the beginning of currency as follows:

A correspondent sends an extract from a newspaper (which I have already seen in several other papers), and asks if it is true. The statement is made that a gentleman, whose name is given, "Owns the only genuine and perfect holy shekel in the world. The relic is about 3,400 years old, and was used in Solomon's temple. There is but one other similar coin in existence, and that is in the British Museum. It is also a holy shekel, but is not so well preserved, and a portion of it has been cut away," etc., etc. Paragraphs like this, about ancient objects, are very common, and when started are tolerably sure to run through a large portion of the daily and weekly press of the country. You do not find them in European papers. This is because the people there live among the remains of older times, and have been thoroughly educated to the importance of cautious inquiry before making statements about the antiquity of any relic. This education has been aided by the many museums in which historical facts in art have been gathered. Similar museums are now growing up in America, and their educational power is already telling with no small force. But they have plenty of work yet to be done. Without doubt the possessor of the coin referred to believes what is stated of it. Possibly he does possess a genuine ancient Hebrew shekel; but it has no such antiquity as is assigned to it. There are many of these coins in public and private collections. The story might be allowed to travel without challenge, were it not that to young persons, and to adults as well, it contradicts the true history of the arts, and consequently all history; for the history of nations and people is recorded in the history of their arts. Every one ought to know the main facts in the history of coinage, an art, which is not only closely related to the commercial and domestic lives of peoples and individuals, but is also, by the permanence of legends and devices on coins, the great assistant of written history in determining dates and events. Coinage, like many of our arts was the legitimate child of older art. We know no older art than the art of writing. The most ancient men of whom we really know anything possessed the art of writing making vocal sounds visible to the eye in signs. They also possessed the art of engraving these signs on stones, with which to impress the signs on soft substances. Engraved seals are among the oldest known works of human art. But men used seals for some thousands of years (certainly more than two thousand) before the idea was suggested of engraving a die to stamp a device, like a seal stamp, on fixed weights of metal. This idea came, as so many great inventions have come, in obedience to the demand of the people for it. Inventions record the conditions of peoples, their desires and wants which the inventions supplied. For thousands of years the human race felt no need of coins. Mercantile transactions, large and small, were carried on chiefly by exchange—barter. There were always objects whose value was determined, not by considerations of utility, but by the mere desire of men to possess them. Such, for example, in ancient Greece and in Asia was lapis lazuli, the stone on which we set small price, but which then ranked as very precious. Gold and silver and other metals were prized for two considerations, utility in making elegant objects of use, beauty in ornamentation. At a very early period gold and silver had become objects of such universal demand that in any and every mercantile transaction the seller was willing to exchange his goods for these metals, or settle differences in barter by them. But neither gold nor silver was a standard of value. It is probable that the earliest standards were cattle and sheep. These were money that could travel on their own legs from one to the other party in a barter. The value of property was not first expressed by the ancients as we express it in terms of precious metals; but the value of precious metals was expressed in terms of property They did not say "that lamb is worth so much gold,' but they did say "that amount of gold is worth a lamb." In truth, then as now, the great fact which men forget, which underlies all commercial transactions, which stultifies all attempts to create metal values by legislation—the great fact was and is, that when you buy a cigar for 10 cents the merchant buys from you the silver just as you buy from him the tobacco. I have no intention of relating the long history of early commerce. There is no space for it. But it is necessary to impress on memory the principal facts in order that you may remember that coinage is not one of the earliest arts. Among the paintings in Egyptian tombs we find represented a man weighing piles of small rings, which from their color seem to be gold and silver. It has been conjectured that for convenience the precious metals were sometimes cast in rings of uniform weight. There are various reasons going to support this conjecture, one most cogent being that the weights used by the Egyptian are in the forms of lambs and half lambs. Connect this with the fact that the Latin word *pecunia* comes from *pecus*, the flock or herd; that the patriarch Jacob purchased land for a hundred "pieces of silver," the Hebrew word thus translated meaning also lambs, and containing the idea of a just weight; that Layard found at Nineveh weights shaped like lambs, and with many other facts which there is no space to cite, and you will then see the ancient relations of precious metals to buying and selling agricultural products. Like grain, gold and silver passed by weight in every purchase and sale. Possibly there were small pieces which men took on sight, but they were not stamped with any sign, and, indeed, that they ever existed is mere conjecture. It is a remarkable fact, if the Egyptians and others did use rings of precious metal, as the Theban tomb indicates, that no specimen ring has ever been found among the countless relics of that old land. Abraham bought the cave of Machpelah for shekels of silver, but these were shekels of weight, not coins. Neither Abraham nor Jacob, nor David nor Solomon ever handled or saw a coin. Precious metals passed only by weight among the Hebrews, as elsewhere, until the later invention of coinage in Iona. The Phenician commerce was revolutionizing the known world in the eighth and nineth centuries before Christ. This extension of commercial relations and increase of local and foreign business among men was probably the impelling motive of the invention of coinage. The idea of the art was and is the furnishing of pieces of metal of uniform weight and uniform fineness, on each of which is impressed the stamp of an authority whose certificate thus impressed will command confidence. The certificate meant, from the beginning, this piece of metal is gold or silver, of such or such fineness, and weighs so much. What that piece of metal was worth

in sheep, or goods, or land, always was and is left to the holder. He sells it always for what he thinks it worth. The name it goes by is a mere matter of convenience, whether it be called stater, phillip, denarius, dollar or ducat. Among the Greeks the first gold coins got the popular name of statar (standard) and long kept it. It is probable that the first coin was struck at Miletus, a city of Iona, about B. C. 800, for the uses of a mixed population of Phœnicians and Greeks. Some have thought a coin of Sardis the first. Others have thought the silver coinage of Ægina to be the leader in the long line. Whichever came first there is no doubt about the period. The new idea spread at once from city to city. The old world had more confidence than the modern in city governments. All the early coins were issues of independent cities or small states. The coins were first rude lumps of metal. One die was used. The lump of metal was driven into the die with a punch and mallet or hammer. The punch mark is a deep dent on one side, and the engraved device of the die on the other. Soon the punch end was engraved with a device, and soon after two dies came into use. The ruder engravings of the early period gave place to the beautiful work of advancing Greek art, until when Alexander conquered Asia, B. C. 332-1, he carried thither the superb gold staters of his father's and his own coinage, and silver drachms and tetradrachms of surpassing beauty. His successors in Asia continued a magnificent coinage. Meantime the Hebrews had no coins except such of foreign states as drifted among them in the ways of trade. Their religion forbade the use of most of these, bearing as they did the images of gods and men. They still used gold and silver only by weight. It was not until 140 B. C. that the first Hebrew coin, a shekel, was struck. In the first book of Maccabees, fifteenth chapter, will be found the authority given by Antiochus Sidetes to Simon the high priest, to coin money in Jerusalem. The great Simon had possibly exercised this right a few years earlier, under the broad powers conferred on him by Demetrius II. The exact year of his first shekel cannot be given, and therefore I call it about B. C. 140. It was certainly not earlier than B. C. 143, and not later than 135, when Simon was murdered. This first Hebrew shekel is a silver coin bearing on one side in the middle a vase or cup, around it in Hebrew characters SHEKEL ISRAEL, and over the cup a Hebrew letter meaning *one*. It is uncertain whether this means the first year of Simon's power in Jerusalem, or the first year of his coinage. On the reverse of the coin are three flower buds on one stem, and around it in Hebrew letters, JERUSALEM KUDOSHA—Jerusalem the holy. Half shekels with similar inscriptions were coined at the same time. Simon continued his coinage of these pieces for only three or four years, and examples are known bearing dates of the second year and the third year. A half shekel is known of the fourth year. It has been common to consider the cup or chalice on one side of this shekel of Simon Maccabeus as the pot of manna which had once been in the Ark in the temple, and the budding flowers, seen on the other side, as representing the budding rod of Aaron. There is very little on which to rest this theory. These coins of Simon Maccabeus are the coins which from time to time are spoken of as ancient Hebrew shekels, dating from the time of Solomon. The silver shekel weighs about 220 grains. Specimens are rare, but not of what numismatists call the highest rarity. Travelers in the east are frequently pressed to purchase silver shekels, which are almost invariably modern counterfeits, bearing little resemblance to the original. I have had in my collection two excellent specimens of the shekel of Simon, the great high priest, and have seen several others. I have one fine specimen of the second year of Simon lying before me as I write. There are copper coins of the time of Simon, and after his time there is a very interesting series of small copper Hebrew coins. Perhaps the most interesting of these are the issues of the Roman Procurators, and among them none are more interesting than those of Pontius Pilate. These copper coins of Jerusalem are not rare. I have gathered handfuls of them out of the earth on the slopes of Mount Moriah. Those of Pilate, dating in the years A. D. 29 and 30, are of most startling interest, when one considers what hands may have handled them. There is small hope of putting a stop to the circulation of misleading paragraphs about coins of the time of Solomon. But it seemed well that the readers of these letters should be guarded against such errors. In truth, there are lessons in the history of coinage for legislators and all who deal in financial affairs—primarily the lesson that gold and silver have been from the beginning of history mere merchandise like guano, bought and sold by weight and quality, and their intrinsic value is never more and never less than "what they will fetch" in the market.

PURE BLOOD.

The overwhelming importance of the blood in the vital economy is well exemplified in the speech of every-day life. Such expressions as "blood is thicker than water," "blood relations," "of the same blood," and "the blood turns cold," are household words, as old as the English tongue. It is difficult to realize the many offices which are filled by the blood. It is a liquid, and, like all liquids, liable to leak, but the only one which endeavors to close a leak as soon as made. It is a solvent, whose like is unknown. It carries, suspended or dissolved, starch and sugar, oil and bone, albumen and fibrin, iron, lime and salt—substances representing the vegetable, animal, and mineral kingdoms. It is a heating apparatus, similar to the hot-water pipes used in great buildings. It starts from the heart and lungs, and carries caloric to the toe-tips, keeping the body at about one temperature from birth to death, and supplying no more warmth to the farthest tissue than to the nearest. It is a fuel unspeakably fine and delicate. It carries into the lungs cells and molecules which are to be burned up, and then absorbs the air requisite to combustion. As the coal burned in a furnace produces heat, and, through the mechanism of engine and dynamo, motion, power, and electricity, so the substances burned in the blood produce heat, motion, muscular power, and mental activity. It oils the joints with synovial oil, like a careful engineer. Like a good housewife, it is perpetually cleaning every article and tissue in the body, and, like a prudent landlord, it never ceases keeping the exterior of the human framework in perfect order and repair. These are but a few of the functions performed by the blood. A list of all that it does would fill a volume. As long as health continues, it performs its work smoothly and thoroughly. This harmonious action means, above all, physiological facts, physical ease and happiness. In childhood, it implies sports and games; in manhood, exercise and toil, and in old age quiet and content. But when health departs there is always an unseen revolution within the organism. No matter through what door disease may enter, whether by germs, noxious gases and vapors, unwholesome foods or deleterious substances, by neglect, inheritance, or surroundings, the blood is no longer able to play its part properly, and pain, weakness, disability, and even death result. It no longer carries the materials with which the body is built up, or it carries them in wrong proportions, thus causing emaciation, bloating, dropsy, and kindred ills. Its heating power changes. One moment it is cold, and another over-warm; or, as we better know it, it produces first a chill and then a fever. It loses its value as a furnisher of force. The energy of life dwindles, and the body becomes weak and nerveless, the brain dull and incapable of action, and the senses untrustworthy and useless. It no longer cleans the interior and repairs the exterior of the corporeal frame. Within, impurities collect here and there, tissues become depraved, and organs lose their activity; without, eruptions disfigure the face, boils and sores the body. In some cases it loses the power to clot, so that the smallest cut becomes a sluice-gate through which it loses itself. In other cases it becomes so surcharged with foreign matter as to discolor the skin and change the hues of health into dingy grays, browns, and yellows. It may be truthfully said that the blood is the seat of all health. The reverse is almost as true, that disease arises from an impure blood. What shall be done, then, to keep the blood pure at all times, and to make it so when, from any cause, it has become defiled with humors? The answer is simple and easy. Use the remedies which nature has provided for the purpose. Assist the functions by using fresh air, sunlight, and exercise, by warm bathing and right living. Then take the medicinal substances of the organic and inorganic kingdoms which eradicate all impurities of the system. Of these the best are podophyllin, yellow dock, stillingia, sarsaparilla, and the iodides. These are recommended by every physician and scientist. They are good separately, but they only achieve their best results when combined as they are in Ayer's Sarsaparilla. This is no secret remedy, but merely a scientific compound of the ingredients named, whose formula is published to the world. It can and should be used by everybody, and when used it is certain to keep the blood pure, and make health and strength the rule of life.

BUSINESS NOTES.

HORSFORD'S ACID PHOSPHATE

Relieves Indigestion, Dyspepsia, etc. For derangements of the brain use Horsford's Acid Phosphate. Dr. D. P. Boulster, Augusta, Me., says: "In functional derangements of the brain and nervous system I have prescribed it with gratifying results."

HORSE MEAT.—Nearly 14,000 horses are annually consumed as food in Paris. In Vienna and Berlin the annual consumption is about 6,000 horses each.

WRONG CYLINDER.—A. D. 2000: "Did you go to hear the phonographic parson this morning?" "Yes; but they got in the wrong cylinder, and we had Rienzi's address to the Romans instead of a sermon."—*N. Y. Herald.*

BIG CAPITAL.—A special meeting of the stockholders of the Edison General Electric Company will be held this month at the offices of the company, 42 Broad Street, New York City, to vote upon a proposition to increase the capital stock of the company from $12,000,000 to $15,000,000.

TAMMANY VICISSITUDES.—Newly-appointed Police Justice: "Your face is familiar to me, prisoner. Where have I seen you before?"

Prisoner (formerly a police justice himself): "I had the honor to send your honor to the penitentiary once when I was on the bench."

The Judge: "Six months."—*Life.*

ORDERED OUT.—The electric light company at Rich Hill, Mo., employed a colored man to operate its plant. A committee of whites waited upon him and notified him that if he continued to hold the place it would be at the risk of his life. The negro became frightened and left the town, and now the company is without an engineer.

HYPNOTISM NOT MAGNETISM.—The experiments of Dr. Charcot, in Paris, have been cited to prove the magnet's mesmeric value. This celebrated specialist did obtain some striking results with a sensitive hypnotic subject under the influence of a magnet. Dr. Charcot not long after repeated the same experiments with the same subject, using, however, a dummy magnet made of painted wood, instead of the real one he had used before. He obtained the same hypnotic results, showing very clearly and positively that magnetism had "nothing to do with the case."

ROUGH ON INSECTS.—Washing floors and shelves with strong pepper tea, or hot alum or borax water, will destroy ants and roaches.

GLASS PLATE.—A glass manufacturer has succeeded in producing glass plates of great breadth, and any desired length, by means of rolling.

TO PRESERVE COLOR.—A little borax, put in water in which scarlet napkins and red-bordered towels are to be washed, will prevent them from fading.

PATENT CAPITAL.—The United States Government Commissioner of Patents estimates that from six to seven eighths of the entire manufacturing capital of the United States, or $6,000,000,000, is directly or indirectly based upon patents.

LOCAL OPTION.—Whiskey will take out every kind of fruit-stain. A child's dress will be entirely ruined by the dark berry-stain on it, but if whiskey is poured on the discolored places before sending it in to wash, it will come out as good as new.

HYPNOTISM INEFFECTIVE.—Dr. Charcot, who has recently finished a long series of experiments with hypnotism, gives as his opinion that not more than one person in 100,000 would be likely to be benefited by this mode of treatment.

DEEP SEA.—Black Sea soundings are said to show that below the depth of 600 feet the water is so impregnated with sulphurated hydrogen gas, emanating from decaying animal and vegetable matter, that living organisms are not found there.

WORTH REMEMBERING.—The talent of success is nothing more than doing what you can do well, and doing well whatever you do without a thought of fame. If it comes at all, it will come because it is deserved, not because it is sought after —*Longfellow.*

FRENCH HENS.—A trade journal has just published some statistics concerning poultry in France. It states that there are in the country 45,000,000 of hens, which, at an average price of 2 francs 50 centimes per head, represent a value of 112,050 000 francs.



Maid for easy Housework —Pearline. *Made* to save work and wear in all kinds of washing and cleaning. *Made* into a powder for your convenience. *Made* as cheap as pure soap for economy. *Made* harmless for all purposes for which soap is used. *What a friend*—a friend who did half your washing and cleaning and made the other half so easy that you did not get too tired to enjoy the time saved; besides made things last longer and look better. That's just what Pearline will do for you if you'll let it. On the back of each package you'll find how it will best befriend you. Every grocer keeps Pearline, and many of your friends use it—ask them about it.

Beware Peddlers and some unscrupulous grocers will tell you, "this is as good as" or "the same as Pearline." IT'S FALSE—Pearline is never peddled, and if your grocer sends you something in place of Pearline, do the honest thing—*send it back.*

180 JAMES PYLE, New York.

ACCURATE AND INDIFFERENT.—Prof. John Trobridge once said: "The difference between the scientific man and unscientific man is, that one makes accurate measurements, while the other is satisfied with general knowledge, and does not ask 'How much?'"

DIET AND HAIR.—It has been suggested that the study of the influence of diet and habit upon the color of hair in different nations of men may cause discoveries by which the color of the hair in the human race may be modified by judicious treatment.

WORTH TRYING.—It is not generally known that ink-stains can readily be removed from the fingers with the head of a parlor match. Moisten the ink-stained spot and rub it gently with the head of the match, keeping the skin wet so that it will not be burned.

BRITISH ADULTERATION.—In England and Wales, out of 26,954 food samples which were recently analyzed, 3,096 were found to be adulterated. This is equal to 11½ per cent.—a percentage lower than in any previous year since 1888, when it was under 11.

COLD WAVES.—Prof. T. Russell defines a cold wave as a twenty-degree fall in temperature in 24 hours over an area of 50,000 square miles, the temperature in some part of this area descending to 36 deg. During the past ten years there have been no less than 691 cold waves in the United States.

KITCHEN THERMOMETER.—Miss Flora Grace, of Iowa, is the inventor of a cooking thermometer, which, instead of registering "summer heat," "blood heat," and "freezing point," marks the boiling point, the gently simmering altitude, and the varying baking points for meats, bread, cake and pie.

MARK, AND AVOID THEM.—Dr. Broadbent, in an address before the British Medical Association, says a mark of a weak medical man "is the indiscriminate use of stimulants in fevers, a ready resort to narcotics and sedatives, treatment directed to symptoms only, and a fondness for new drugs of high sounding names."

WHAT IS WEALTH?—An English statistician says that public wealth is made up of ten items, every one of which can be calculated to a nicety except the value of public works. Thus land is worth thirty times the assessed annual rental valuation. Houses are worth eighteen times the rental. Furniture, according to insurance agents, is worth, on an average, half the value of the house. In the comparison of aggregate values arrived at by this computation our own country comes out ahead. The wealth of France is $45,500,000,000; that of the United Kingdom, $48,000,000,000; and that of the United States, $68,000,000,000.

CLEVELAND'S SUPERIOR Baking Powder.

The Official Reports of the
United States Government, 1889,
Canadian Government, 1889,
New Jersey Commission, 1889,
Ohio Food Commission, 1887,
prove that Cleveland's is

THE STRONGEST

of all the pure* cream of tartar baking powders.

*Ammonia or alum powders, whatever their strength, should be avoided as injurious.

Piso's Remedy for Catarrh is the Best, Easiest to Use, and Cheapest.
CATARRH
Sold by druggists or sent by mail. 50c. H. T. Hazeltine, Warren, Pa.

Fine Table Wines
From our Celebrated Orleans Vineyard.
Arpad Haraszthy & Co.
Producers of the
ECLIPSE CHAMPAGNE,
530 Washington St.
SAN FRANCISCO.

GENERAL AGENCIES:
NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOSEPH R. PEEBLES' SONS CO., 73 West Fourth Street.
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.

PUBLICATIONS OF THE
ANALYST PUBLISHING CO.

THE AMERICAN ANALYST.
Weekly. Every Thursday. $1 per year.

THE ROOFER, TINNER AND SHEET-IRON WORKER.
Monthly. 15th each month, $1 per year

THE LEATHER MANUFACTURER.
Monthly. 1st each month. $3 per year.

Reliable agents and representatives wanted everywhere on liberal terms. Address

ANALYST PUBLISHING CO.,
19 PARK PLACE, NEW YORK.

THE N. Y. HAY EXCHANGE BULLETIN.

OFFICIAL REPORT OF THE HAY AND STRAW MARKET AT NEW YORK.

COMMISSION SALESMEN.

NOTICE.

These names are arranged alphabetically.

WM. AFFLECK & CO.,
Commission Merchants in
HAY AND STRAW,
Office No. 5,
N. Y. Hay Exchange Building.

J. ALSDORF,
Commission Dealer in
HAY AND STRAW,
33d Street and 11th Ave.,
NEW YORK.

E. A. DECKER. F. W. TOMPKINS.
DECKER & TOMPKINS,
Commission Merchants in
HAY, STRAW, GRAIN,
Office: 16 New York Hay Exchange Building.

L. S. DILLENBACK. T. O. PECK.
DILLENBACK & PECK,
MAIN OFFICE:
Room O, N. Y. HAY EXCHANGE, N. Y. City.
STOREHOUSE AND BRANCH OFFICE:
101, 103 and 105 North 5th St.,
and 152 and 154 Berry St.,
Palmer's Dock. Brooklyn, E. D.

EDWIN B. DUSENBERRY,
COMMISSION MERCHANT,
And Wholesale Dealer in
HAY, STRAW AND GRAIN.
No. 1, N. Y. Hay Exchange, New York.

THOS. FONDA & CO.,
Commission Merchants
And Dealers in Hay, Straw, Grain and Country Produce,
13 & 14 N. Y. Hay Exchange Building.

N. A. FULLER,
COMMISSION MERCHANT IN
HAY AND STRAW,
33d Street and 11th Ave.,
NEW YORK.

THEO. P. HUFFMAN & CO.,
COMMISSION MERCHANTS
In Hay, Straw, Grain, Feed, &c.,
648 & 650 West 34th Street,
Bet. 11th & 12th Aves., N. Y.

H. B. Jenkins. F. S. Williams.
JENKINS & WILLIAMS.
COMMISSION MERCHANTS IN
HAY, STRAW AND GRAIN,
HAY EXCHANGE.

The N. Y. Hay Exchange is located at 601 W. 33d St., corner 11th Avenue.

Only the cards of members of the N. Y. Hay Exchange appear on this page.

RULES FOR GRADING HAY AND STRAW

As Adopted by the N. Y. Hay Exchange.

CHOICE OR PRIME HAY—Shall be pure timothy, properly cured, bright, natural color, sound and well baled. No. 1—Shall be timothy, not more than one-eighth (⅛) mixed with "red top" properly cured, bright natural color, sound and well baled. No. 2—Shall be timothy, not more than one-quarter (¼) mixed with red top and blue grass, properly cured, good color, sound and well baled. No. 3—Shall include all timothy not good enough for No. 2, proportionately mixed with blue grass, red top, and clover, sound and well baled. SHIPPING—Shall include all hay not good enough for other grades, and may be natural meadow, free from wild or bog grass, and must not contain over one-third (⅓) clover, sound and well baled. CLOVER MIXED—Shall include all hay containing not over two-third (⅔) clover, and one-third (⅓) timothy, properly cured, sound, and well baled. CLOVER—Shall be medium grown, properly cured, good color, sound, and well baled. NO GRADE OR REJECTED HAY—Shall include all hay badly cured, musty, stained, or in any way unsound.

No. 1. RYE STRAW—Shall be clean, bright, long Rye, in bundles, sound, well and securely baled. No. 2—Shall be long Rye, in bundles, sound, well and securely baled. SHORT RYE—Shall be clean, not bundled, sound, well and securely baled. OAT STRAW—Shall be clean, bright, sound, well and securely baled.

In the New York market bale-wood is weighed in without tare. In all other markets it is deducted.

These quotations for choice, No. 1 and No. 2 hay are for large bales. 5c. per cwt. less when in perpetual press bales.

The New York quotations are per cwt. At other points, per ton.

NEW YORK, Jan. 5, 1891.

The following are the market prices to-day at New York.

	New York.
Fancy Hay	60c. @ 65
No. 1	55 @
No. 2	50 @
No. 3	45 @
Shipping	40 @ 45
Clover mixed	45 @ 50
Clover	40 @
Prime Rye Straw	85 @ 90
No. 2 "	75 @ 80
Oat and Wheat	45 @ 50

Receipts week ending Dec. 27, as follows:
Via N. Y. Central, 209 cars.
" West Shore, 103 "
Total, 312 cars.

From other roads by Lighter to 34th Street, 25 cars.

The market for the past week has been steadily growing weaker, owing to continued heavy arrivals and very bad condition of the streets. The movement of hay has been slow, which has caused an accumulation of stock on hand to a considerable extent, and, as usual at such times, buyers take the advantage of the situation and bear the prices down, as will be seen by the above quotations.

All grades have in a measure suffered the same decline, except, in a small way, fancy hay will bring 65c.

Straw is fairly active, and accumulations fast clearing up.

OSCAR KENT,
Commission Merchant,
HAY AND STRAW,
Room 20, New York Hay Exchange Building.
Personal attention guaranteed all consignments.

JOHN KERWIN & SON,
DIRECT RECEIVERS OF
HAY, GRAIN and GENERAL PRODUCE
DEPOT AND STOREHOUSES,
Palmer's Dock. Nos. 97 & 99 North Fifth Street,
BROOKLYN, N. Y.
SHIPPING ADDRESS, PALMER'S DOCK, BROOKLYN, N.Y.
West Shore R. R., N. Y. C. & H. R. R. R., N. Y. L. E. & W. R. R., Pennsylvania R. R., D. L. & W. R. R., Lehigh Valley R. R., and connections.

W. J. OVEROCKER. PERRY HATCH.
OVEROCKER & HATCH,
Commission Merchants in
HAY, STRAW AND GRAIN,
33d Street & 11th Avenue, New York.
References: West Side Bank, New York City; Exchange Bank, Holly, N. Y.

Gilbert Plowman, NEW YORK. Spencer Billington, FORT HUNTER, N. Y.
PLOWMAN & BILLINGTON
COMMISSION MERCHANTS,
HAY, STRAW, GRAIN, &c.
No. 15 N. Y. Hay Exchange,
33d St. & 11th Ave., NEW YORK.

JAMES ROZELL & SON,
Commission Merchants and Wholesale Dealers in
HAY, STRAW, GRAIN AND COUNTRY PRODUCE.
N. Y. Hay Exchange, New York.

SKINNER, BLOOM & CO.,
Successors to Rogers, Skinner & Co.,
COMMISSION MERCHANTS
And Dealers in
Grain, Flour, Hay, Feed, Meal, &c.,
74 CORTLANDT STREET, - NEW YORK.
Barge GYPSIE, Foot Bridge St., Brooklyn.

H. SLINGERLAND,
Barges MERCHANT and HARVEST QUEEN
Foot of West 11th Street,
HAY AND STRAW.
Also, 33d and 35th Streets, and all Railroad terminals. Special facilities for lighterage free goods.

CHARLES F. SWAN,
Commission Merchant in
HAY, STRAW & GRAIN,
At all the Railroad Terminals in New York, Brooklyn, Jersey City, &c.
MAIN OFFICE,
108 BROAD ST., NEW YORK.

TITUS, WELLS & WILLETS,
Commission Merchants and Dealers in
HAY AND STRAW,
133 Roosevelt St.,
NEW YORK.

VAN ALSTYNE & CO.,
COMMISSION MERCHANTS.
SPECIALTIES:
HAY, STRAW & FLOUR,
Nos. 2 and 4 Stone St., New York.
Liberal advances made on consignments.

G. E. Van Vorst. James M. Hillery.
VAN VORST & CO.,
COMMISSION MERCHANTS,
HAY, STRAW AND GRAIN
N. Y. Hay Exchange, 33d St., & 11th Ave.
562 & 564 West 34th St., NEW YORK.

NOTICE.

These names are arranged alphabetically.

HOSMER, CRAMPTON & HAMMOND,

NO. 43 COMMERCIAL STREET,

BOSTON.

COMMISSION MERCHANTS,

HAY, STRAW, FLOUR & GRAIN.

E. B. HOSMER, G. W. CRAMPTON, BENJAMIN HAMMOND, A. L. ROBINSON.

BOSTON HAY AND STRAW MARKET.

Hay, choice to fancy in large bales	$14.50 to	$15.00
Hay, choice to fancy, perpetual pressed bales	13.50 to	14.00
Hay, fair to good	12.50 to	13.00
Hay, poor to ordinary	10.00 to	12.00
Hay, Clover and Clover mixed	 to	
Hay, swale	9.00	
Straw, Rye, good to prime	17.50 to	18.00
Straw, Oat	9.00 to	10.00

BOSTON, Jan. 5th, 1891.

Receipts for the week are 278 cars of hay and 20 cars of straw; corresponding week last year, 169 cars of hay and 15 cars of straw. There is no special change to note in the market from a week ago. Receipts have been fully equal to the demand, which has not been active. There is still on the tracks of the various railroads, unsold, quite a large amount of hay; the bulk of the stock being on the Fitchburg road. We quote the market quiet at quotations.

Market for Rye straw is very firm; some very choice cars occasionally exceeding our quotations.

H. F. WILSON,
WIRE BALE TIES,
458 WEST 38th STREET, New York.



40 COUPON OFFERS
and our large Illustrated Catalogue of SCROLL SAWS, Tools, Designs, and 30 Cts. WORTH of *full size* SCROLL SAW DESIGNS, sent FREE for 10 Cts. in stamps to pay postage.
JOHN WILKINSON CO., 269 State St., Chicago.

CHALLEN'S LABOR SAVING RECORDS are used and *re-ordered by* 3000 Advertisers and 3000 Newspapers. Try them for every line of business and profession.
CHALLEN, Publisher,
10 Spruce St., New York.

Books

New Issues every week.
Catalogue, 96 pages *free.*
Not sold by Dealers; *prices too low.* Buy of the Publisher,
JOHN B. ALDEN,
393 Pearl Street, New York.

SWIFT'S

CHOICE

Chicago Dressed Beef

AND

MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,
UNION STOCK YARDS,
CHICAGO, ILLS.

THE

MORISON–ALLEN CO.,

MANUFACTURERS OF

Improved Water Purifiers,

145 BROADWAY, NEW YORK.

Improved Systems of FILTRATION
GRAVITY AND PRESSURE.

	Capacity.
W. F. & F. C. Sayles, Saylesville, R. I.,	3,000,000 galls. daily
American Wood Paper Co., Manayunk, Pa.,	2,000,000 "
Albermarle Paper Mfg. Co., Richmond, Va.,	1,000,000 "
The Franklin Sugar Refinery Co., Phila., Pa.,	500,000 "
Trenton Iron Co., Trenton, N. J.,	500,000 "
Diamond Ice Co., Wilmington, Del.,	150,000 "
Cranston's Hotel, West Point, N. Y.,	200,000 "

And Many Others.

THE MORISON--ALLEN CO.
145 Broadway, New York.

HARTSHORN'S SELF-ACTING SHADE ROLLERS

NOTICE SCRIPT NAME OF Stewart Hartshorn ON LABEL, AND GET THE GENUINE HARTSHORN



A HIGH-GRADE PIANO

AT A VERY MODERATE PRICE.

NEW DESIGNS. FANCY WOODS.

Terms Easy. + Monthly Instalments.

TWO, THREE AND FOUR PEDALS.

Catalogues, Prices, Terms, Etc., sent to any address.

EVERY PIANO WARRANTED 5 YEARS.

(Mention this Paper.)

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,

HOWARD STREET, BOSTON, MASS.

GOLD MEDAL, PARIS, 1878.



W. BAKER & CO.'S

Breakfast Cocoa

from which the excess of oil has been removed,

Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

"BILLET"

are

Carefully Selected French Sardines, Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.

MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.

STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

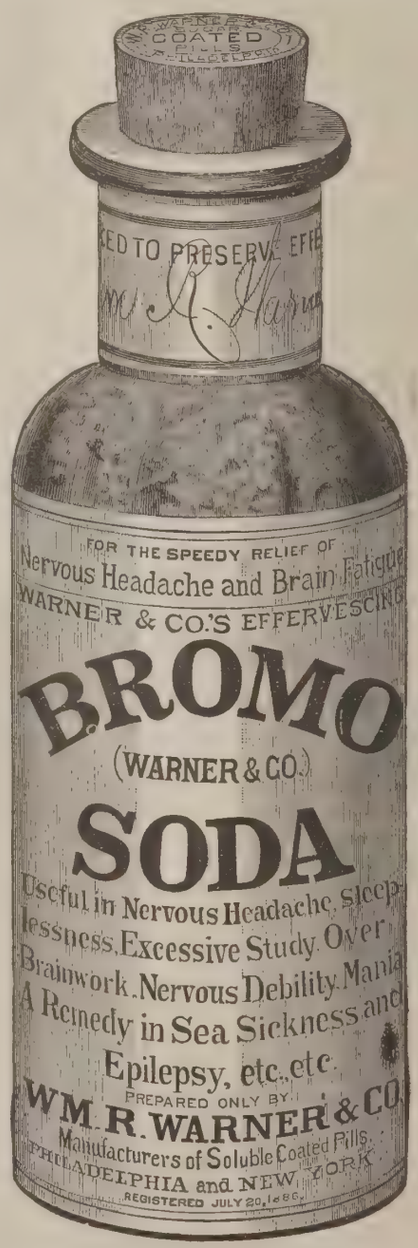
FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

BROMO SODA.

Useful in Nervous Headache, Sleeplessness, Excessive Study, Over Brainwork, Nervous Debility, Mania, Etc.

DOSE—A heaping teaspoonful in half a glass of water, to be repeated once after an interval of thirty minutes, if necessary. Each teaspoonful contains 30 grs. BROMIDE SODIUM and 1 gr. CAFFEIN,



SUPPLIED BY ALL DRUGGISTS

Ask for (Bromo-Soda, Warner & Co.) and take no other "Bromo."

LEA & PERRINS' SAUCE



In consequence of Imitations of LEA & PERRINS' SAUCE, which are calculated to deceive the public, LEA & PERRINS beg to draw attention to the fact that each bottle of the Original and Genuine

WORCESTERSHIRE SAUCE

bears their Signature thus—

Lea & Perrins

For Sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

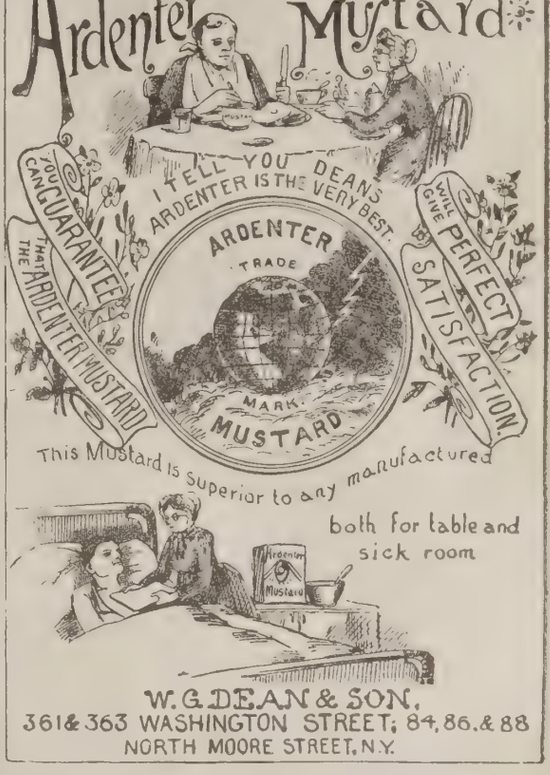
JOHN DUNCAN'S SONS, NEW YORK.

ESTABLISHED IN LONDON, 1831.

DEAN'S

PATENT

Ardenter Mustard



This Mustard is Superior to any manufactured

both for table and sick room

W. G. DEAN & SON,
361 & 363 WASHINGTON STREET, 84, 86, & 88
NORTH MOORE STREET, N.Y.

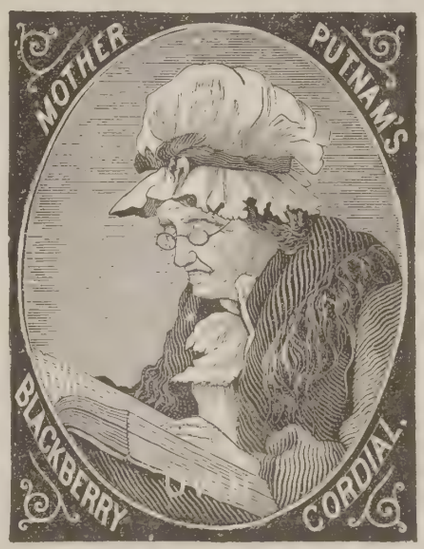
Sura Cura ROBINSON'S SURE CURE FOR **RHEUMATISM**

And NEURALGIA,

And remedy for diseases arising from an impure state of the blood. An antidote for **MALARIA.** Price 50 c. and $1. Sent by mail on receipt of price. Send for Circular.

R. W. ROBINSON & SON,
104 Greenwich Street,
NEW YORK.

Sura Cura



C-U-R-E-S

DIARRHŒA, DYSENTERY,

MALARIA,

all ailments of the bowels. Is an anti dyspeptic, and a **DELICIOUS INVIGORATIVE.** Leading Physicians prescribe it for **ADULTS AND CHILDREN.** *FOR SALE* by Druggists and dealers.

RHEINSTROM BROS., DISTILLERS OF FINE LIQUEURS,
54, 56, 58, 60, 62 E. 3rd STREET, CINCINNATI, O.

BLAIR'S PILLS.



Great English Remedy for GOUT, RHEUMATISM and KIDNEY COMPLAINTS.

SURE, PROMPT and EFFECTIVE.

Large Box. 34; Small, 14 Pills.

At all Druggists, and

224 WILLIAM STREET, NEW YORK.

RIDGE'S FOOD

The Most Reliable Food
For Infants & Invalids.
Not a medicine, but a specially prepared *Food*, adapted to the weakest stomach. 4 sizes cans. Pamphlet free. *Woolrich & Co.* (on every label). *Palmer, Mass.*

HAMMOND'S

CELEBRATED

Calumet Oleomargarine

Strictly pure, cheap and healthful.

Ask your grocer for it.

Put up in packages of all sizes, also prints and rolls.

C. H. HAMMOND CO.,

607 to 615 THE ROOKERY,

CHICAGO.

Also offices at Boston, South Omaha, Neb., and Hammond, Ind.

Pure LAGER BEER,

"IMPERIAL" and "CULMBACHER"

Brewed & Bottled SPECIALLY FOR HOTELS, CLUBS AND PRIVATE FAMILIES

BY

Beadleston & Woerz
291 W. 10th St. New York.

Orders by Postal Card promptly attended to.

NATURAL MINERAL PURGATIVE WATER.

From the Springs of

VILLACABRAS.

Prescribed by the Highest Medical Authorities.

Stronger effects than any other under smaller volume. No smell—no repulsive taste—no after-constipation—no gripes. As a daily laxative it can be taken, either pure or mixed with milk, tea or broth.

Sold by all Good Druggists.

NATRONA BI-CARBONATE OF SODA.

ABSOLUTELY PURE.



The nature of the raw material from which NATRONA BI-CARBONATE OF SODA is made—viz., kryolith, a mineral containing *pure sodium*—insures a purity and uniformity of product which cannot be obtained from any other known material. In making BI-CARB. SODA from any other raw material, the use of sulphuric acid is a necessity, but none is used in any part of the process of making NATRONA BI-CARB.; hence its entire freedom from the slightest trace of arsenic, which is always present in ordinary soda. Its absolute purity and entire freedom from all traces of *sulphate of soda*, common salt and other impurities, render NATRONA BI-CARB. NEARLY TASTELESS, and being bolted through the finest bolting-cloth, insures the finest stage of division.

To these indisputable facts the attention of CONSUMERS of soda is specially called. They are IMPORTANT, and should influence both those who use and those who sell soda, to buy and sell NONE BUT THE BEST.

The NATRONA BI-CARB. Soda is kept in stock by almost every wholesale druggist and grocer throughout the United States, of whom it may be ordered.

Natrona Bi-Carb. Soda is unequaled by any other brand of English or American Manufacture.

PENNA. SALT MANUFACTURING CO.,

NATRONA CHEMICAL WORKS. PHILADELPHIA, PA.

DR. PRICE'S CREAM Baking Powder.

Most Perfect Made

A Pure Cream of Tartar Powder—
Superior to every other known.
Used in Millions of Homes—40 Years the Standard.
Delicious Cake and Pastry, Light Flaky Biscuit, Griddle Cakes
Palatable and Wholesome.
No other baking powder does such work.

THE GREAT AMERICAN TEA COMPANY

LADIES GET UP ORDERS. Entire New Departure. A HANDSOME PRESENT TO EVERY SUBSCRIBER.

THE GREATEST INDUCEMENTS EVER KNOWN TO INTRODUCE OUR NEW GOODS.

If you enjoy a cup of **Delicious Tea** send in your orders. 3½ lbs. Fine Tea by mail on receipt of $2 and this "ad". Beautiful premiums given away with $5 orders and upwards. The **most extraordinary bargains** ever offered, during the next thirty days. China Tea Sets and Lamps with $10, $15 and $20 orders to introduce our excellent **New Crop Teas.** Formosa and Amoy, Oolong, Congou. English Breakfast, Japan, Imperial, Young Hyson, Gunpowder, Sun Sun Chop and Mixed. Good mixed teas 20c. per lb. Headquarters in United States for Fine Teas. One pound of our tea will go farther than three pounds of trash. Thirty years' national reputation for selling **Pure Goods Only.**

THE GREAT AMERICAN TEA COMPANY,
P. O. BOX 289. 31 and 33 Vesey Street, New York.

Tabasco Pepper Sauce
OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced, by connoisseurs, to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY,
NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

All New Subscriptions sent now will be good until January, 1892.

GLENN'S SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

Beware of Counterfeits.

Wholesale Depot,

C. N. CRITTENTON,
115 FULTON STREET,
NEW YORK.

Be progressive and keep abreast of the times. Avoid dyspepsia by using **Lard Compound** and **Cottolene,** a substitute for lard.

The highest medical authorities pronounce them healthful; and expert cooks commend them.

Our **Clairette** brand of cotton oil soap is the purest and best laundry soap in the market; as pleasant to the hands as genuine castile.

N. K. FAIRBANK & CO.,
CHICAGO AND ST. LOUIS.



AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 3. NEW YORK, THURSDAY, JANUARY 15, 1891. WHOLE No. 203

American Analyst,

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - $1 per year.
Single Copies, - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.

Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.

Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,

H. LASSING, M. D.,
T. P. McELRATH, } *Editors.*

No. 19 Park Place, . . . New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

Bridgman, Laura 29
Buddhism 28
Comelines and Diet 28
Condensed Milk 29
Do Cats Spread Disease? 27
Domestic Dietetics 29
Eating with Moderation 26
Editorials 25
Succi's Fast; Can We Have Clean Streets; Bridget Superseded; Scientific Swindling.
Gun Cotton 27
Hay Exchange Official Bulletin 32
Old Papers 28
Olives 30
Paint fron Cinders 26

SUCCI'S FAST.

Succi, the Italian faster, who began a fast of 45 days in New York on November 5, ended his feat at 8.23 P. M., December 20, 1890. Other fasters have gone forty days without food, but they were so weak that they could not sit up. Dr. Tanner could not sit up after the tenth day, and could not write his name after the fifteenth day, but Succi scorned the idea of weakening all through the weary weeks. On his fifteenth day he rode seven miles on horseback, and exercised every day after. During his fast Succi drank freely of water, and took small quantities of a liquid which he calls an elixir, and which is supposed to contain morphia. At 6 P. M., December 20, he was examined and his weight was found to be 104¾ pounds; on November 5 it was 147¼ pounds—a loss of 42½ pounds, or less than a pound a day. His temperature was 98.2; pulse, 62; respiration, 19; general condition weak; tongue clear, moist and steady. The bulletin was signed by the thirteen physicians who have watched during the fast. The worst attack of gastric trouble that he had during his fast occurred on the last day, during which his pain was so acute that it was feared he would collapse; but his will-power carried him through. From 5 P. M. until he took his first cup of cocoa, at 8.20, his pain continued to be more or less acute. It was evident in many ways—by the distortions of his face, which was horribly shrunken; by his frequent change of position on the lounge upon which he was reclining; by the nervous twitchings of his wasted hands; by the restless glare of his deep-sunken eyes, and in various other ways. When the cocoa was prepared, shortly after 8 o'clock, Succi got off the lounge and staggered to the table where the nourishing diet was placed. The spectacle he presented was pitiable. He looked like a skeleton. The next day Succi arose from sleep after a long slumber, which he fell into shortly after his feat was ended, and an elaborate meal was placed before him. He ate with extraordinary relish. Following is the menu: Anchovies, with butter; chicken soup, with rice; fried smelts, fried calves' brains, quail on toast, cocoa pudding, fruit, confections, ice-cream, coffee; one-half pint Rorals Extra; one-half pint Grand Sec. He occupied two hours in consuming the food placed before him. He never faltered, but ate with zest.

CAN WE HAVE CLEAN STREETS?

The recent heavy snow-fall in New York, and the difficulty of disposing of the snow, have elicited many suggestions on the important subject of street cleaning. It has been estimated that it would cost over half a million dollars to remove the snow from the 360 miles of paved streets in this metropolis. Professor Chandler, for ten years President of the Board of Health, when asked if the streets of New York were kept clean within the meaning of the statutes, prior to the recent snow-storm, replied that they were not, and because there had been no proper business system and no system free from politics. "We have," said Professor Chandler, "a guerilla system of street cleaning, which should be wiped out and an organization effected on the improved lines of the police and fire departments. I prepared a plan ten years ago for keeping the streets clean by a commission to consist of the mayor, the commissioner of public works and the presidents of the police and health departments. It was on the block system, and called for an organized, uniformed and permanent force of street sweepers, to be appointed much as men now are when chosen as policemen or firemen, and to be appointed for life or during good behavior." Professor Chandler further stated that by laboratory experiment he had found that street dirt is useless as a fertilizer, and its only value was to fill in sunken lots. The difficulty of keeping the streets of a great city clean is scarcely less than that of maintaining an efficient police or fire department, and yet it is frequently carried out in such an unsystematic way that the expense is greatly increased, while the work done is performed in a hap-hazard, careless way. The suggestion of Professor Chandler that an organized, uniformed and permanent force of street sweepers be maintained, and the work done on the block system, is a good one, and certainly the reproach of dirty streets is one that from considerations of health, decency, and pleasure, should receive much more attention in American cities than it does at present. As compared with the streets of European cities, and especially with those of Paris, the streets of most American cities are disgustingly dirty. In dry weather they are not so much noticed, except on windy days, when a bewildering variety of dirt and fertilizers effects a lodgment in the eyes and on the clothing of pedestrians, but on rainy days the slush and dirt are simply intolerable to those who have been accustomed to the luxury of clean streets.

BRIDGET SUPERSEDED.

If the civilized portion of the human race were to vote upon the question, what is the next great labor-saving invention for which there is a long-felt want, no doubt a large majority would be in favor of an invention which would enable us to dispense with the servant girl. The invention has been made and patented. It is an improvement in dwelling houses. Strange to say, the inventor, Mr. L. E. Ladd, lives in Philadelphia, famed already as the city of dwelling houses. The improvement consists in a block of twenty-four or more buildings upon one lot of ground, each of which communicates through a passage-way with another building in the centre of the lot, which contains the general kitchen, laundry, supply-rooms, heating and ventilating apparatus, electric light plant, etc. A dining-room is built in the rear of each house, immediately adjoining the passage to the general kitchen. The central building would be connected with each of the houses in the block by a speaking tube or by telephone, whereby the housekeeper could order supplies in advance for each successive meal, the superintendent of the general supply building thus having the opportunity to buy in large quantities and better suit individual tastes. Like all co-operative schemes, the idea is a very attractive one, but it will need a capitalist with nerve to put up such a block of buildings and a good agent to induce people to live in them, before it will be much of a success. The one that puts the idea in successful practice will be worthy of more credit than the inventor.

SCIENTIFIC SWINDLING.

Reference was recently made by the *Electrical Review* to the possible adoption of electric welding to the minting of bi-metallic coins. The idea is ingenious, and likely to prove entirely successful. It now appears, according to that same authority, that electrical

COLGATE'S COLEO.



A PURE PETROLEUM PRODUCT FOR TOILET AND MEDICINAL USE.

methods have already been applied to reducing the weight of coins, but for a less laudable object. It has recently been noticed that a large number of light gold coins are in circulation, and the discovery has been made that the "sweating" is accomplished by electrolysis. The scientific swindler constructs an electro-deposition plant, using a ten dollar gold piece as an anode and a small metal plate as a cathode. The battery is "set in motion" (newspaper sciencific terminology), and, presto! in a few minutes 50 cents worth of gold is deposited on the metal plate, and the gold coin is worth so much less than before. As the gold is removed equally from all parts of the surface of the coin, its appearance is scarcely altered by the process, only an expert being able to detect the slight blurring of the design and lettering. When the coins come to be weighed, however, the result is more apparent, and cases have lately come to light where large payments made in gold have revealed light weight to the tune of several hundred dollars. Truly, this is the age of electricity, when electrolysis is turned to account by thieves and swindlers for sweating the currency! It is to be hoped, for the vindication of science, that the same subtle agent that is at present being subverted to further such nefarious schemes will bring about the capture of the schemers.

EATING WITH MODERATION.

HOW PEOPLE STARVE THE BRAIN WHILE FEEDING THE STOMACH.

The persons living to a green old age, who have come within the range of my observation, were abstemious themselves, and had either sprung from poor families or came from the South, where heavy meat meals are not enjoyable (says Mrs. Crawford in London *Truth*). Guizot, who was not a vigorous trencherman, started in poverty, and was a Southerner. Thiers started in the same condition, ate twice a day and very heartily, but was so heavy after eating as to be obliged to go to sleep. He died of apoplexy after eating. I attribute the extraordinary difference in quality in the early and late works of Victor Hugo to his having only scant meals when he wrote the former, and to his having plentiful and delicious ones, to which he did the fullest justice, when he turned out the latter. Victor Hugo was *spirituel* before lunch or dinner; he was inflated in speech and bereft of all sense of the ridiculous when digesting either repast. M. de Lesseps is almost Oriental in his abstemiousness at table, he being of a Southern family and having lived long in hot countries, which are perfectly healthful to those who adapt themselves to the climate. I dare say he owes his longevity and high spirits to his sobriety in food as well as in drink. Volumes have been written against drunkenness. But any doctor who understands well the human frame will tell you (if he can cast aside humbug) that drink is not as bad in its effect as gormandizing. Nothing so hastens senility as the latter. I should like to know how Ninon l'Enclos ate and drank, but fancy she must have been temperate to be so brightly intellectual, as well as good-looking, to a great old age. Catherine de Medici made it a rule to rise from table with an appetite, and to prefer lentils and onions and chestnuts to meat. She brought Italian confectionery into fashion and was always rating her married daughters, when she corresponded with them, for eating so much and fatiguing themselves so little. M. Barthelemy Saint-Hilaire, though eighty-four, works as hard and with as little fatigue as he ever did in his life. Twenty years ago he said to me: "I am persuaded that the civilized man eats three times more than what he needs when he is not checked by poverty. For my part, I was too poor until I was elderly to be a gourmand, and when I now go to dine at a friend's house I only play with my knife and fork. Dinner is a mistake." The Czar, his brothers and his uncles, are all gormandizers, and what a heavy wearied lot they all look, unwieldy as megatheriums and about as intelligent. I have never doubted, since I began to think upon the subject, that George the Third ate himself into the mad doctor's hands, and Louis the Sixteenth into semi-imbecility. Who were the great men of the eighteenth century? Voltaire, who lived on coffee and had too weak a stomach to bear much food; Washington, who was spare and abstemious; and at the Revolution, the people of Paris, who were starvelings. Sankey easily explains his success when he says that all he wants is a crust of bread, a mouthful of meat when he can get it, and a cup of tea. The Scotch were a proverbially hungry people when they turned India into a British dependency. I know a literary woman who leads a singularly laborious life, and thrives in health and spirits on it. She says that she owes in a great degree her good spirits and capacity to get through any amount of work, of worry, and of strain on the nervous system, by cutting dinner. What with serious occupations, running to exhibitions, theatres, balls, and what-not, she is hardly ever in bed before half-past two in the morning, and more often three; yet she gets up at nine and keeps fresh, lively, and active though weighted with *embonpoint*. This is her dietary: A bowl of warm, unsugared milk, flavored with coffee, is taken without anything else at nine in the morning. Lunch is at half-past twelve, of fish, one meat dish, cooked vegetables and cheese. Salad is taken pretty often, and the meal is followed by several small cups of black coffee. When cherries, currants, or strawberries are in season, a plateful of one or the other is taken at six o'clock, without any other sort of food. Otherwise there is an unbroken fast from lunch to one or two in the morning, when there is a slight refection made of vegetable broth or chicken broth, a small roll of hard-baked bread, an egg, and a little cheese. My friend tells me that she most enjoys living when slightly hungry; then her mental consciousness is most keen and her wits are most wakeful. Not being thin, she never feels, however long she may go without breaking her fast, the pangs of hunger. She walks three or four miles daily. It is torture to her to engage in intellectual work after a repast, when the stomach, if the brain has to work, gets in conflict with it. The theatre is not enjoyable just as one is rising from table. Query: May not the decay of the drama be traced to the heavy seven o'clock meals of box-hirers? "The *polissonnerie* of the ballet," said the director of the dance department of the Opera-House to me the other day, "is due to its great patrons being rich *petits creves* and hoary financiers and other rich old men. They come gorged with palate-tickling food to the opera, and want something that is at once a *polissonnerie* and a *tour de force*. Gracefulness is thrown away on them." I have been discussing the dinner question with a Jew, aged eighty, who is an enthusiastic Mosaist. He himself ate the *vache enragee* until he was five-and-twenty, and thinks it was the making of him. The reason he gave why his brethren bear so well all climates is that they spoil their meat when they prepare it according to the prescriptions of their religion. It is first bled, and then steeped in salt and water until redness stains the water. This unfits it for the spit or the grill, and does not make it toothsome in a stew—the only way in which it can be done, unless boiled. Meat thus prepared has no savor, and does not tempt the Jew to eat of it gluttonously. Dying of apoplexy does not much matter, since every one must die of something. But, as my aged Hebrew friend observes, it does matter to be for years in a state that ends in apoplexy—to wit, with a starved brain. The brain starves in the midst of too great plenty, because gormandizing clogs the capillary arteries which bring life to the brain substance. The blood does its best to do its work, and in its efforts at last bursts a vessel. I once knew an impresario, who was also a Jew. He was behind any number of lyrical theatres, from Stockholm to Sydney, cafes-concerts, music-halls, and other places where singing was the attraction. He held carniverous feeding in horror, and told me that he never lost his time seeking for fine voices in countries where a fish or a meat diet prevailed. The most fish-eating Italians—those of Naples and Genoa—have not often among them sweet singers. The most meat-eating part of Great Britain—England—is also a voiceless country. Though the singing is so fearful in the Scotch kirks, my friend found some divine songsters south of the Grampians, and a greater number in the Highlands. He often heard peasant Irish women "lilt" and sing like nightingales, but never in the towns. Sweden was a country of song, because a country of grain. Norway was not—too much fish was eaten there. Vocal capacity disappeared in musical families who got rich. They ate too much meat. The vocal birds are eaters of grain, fruit, and vegetables. No carniverous one could ever sing a song. It croaks, has a bad liver, and is generally melancholy.

PAINT FROM CINDERS.

UTILIZING REFUSE SLAG OF A NEW JERSEY IRON FOUNDRY.

A newspaper correspondent writing from Boonton, New Jersey, January 3d, says: "When the ancestors of the rich Lord family in New York turned out cannon here at Boonton away back in 1778-81, and piled up the cinders that came in big chunks from the puddling furnaces, they never supposed this refuse would be good for anything. The cannon and cannon balls that were manufactured in this inland Jersey town, and sent over to Washington's army at Morristown, helped to secure American independence, and the cinders soon made a huge pile along the banks of the rushing Rockaway River. In after years, as the Boonton iron works became more and more famous, the piles of refuge from the mills increased. High embankments of cinders surrounded the works, and it became a problem how to dispose of this heavy and supposedly useless material. As the township laid out roads in the vicinity, this slag, as it is generally called, was carted into the country and used for filling in or for road-beds. The result was that for miles around the iron slag became part of the soil, and is still mixed in with the clay and slate that compose the earth. It was considered a nuisance by the owners of the iron works, and they were glad to get rid of it in any way possible. To-day the great heaps of slag have a commercial value that is constantly increasing, and the price of Boonton slag promises soon to be quoted in the iron market of the country. The discovery that it had value is of comparatively recent date. The old furnaces were shut down for years after the death of one or two of the Lords, and it was only after the management of the Lord estate came into the hands of Benjamin Nicoll, who married a daughter of Daniel Lord of Morristown, that the works were started

p and the slag was found to possess commercial value. Mr. Nicoll is a brother of De Lancey Nicoll, who follows John R. Fellows as District Attorney of New York. He is an active, athletic young fellow, a graduate in the famous Princeton Class of '77, and captain of the only boat crew that the orange and black ever sent to Saratoga and won a pennant with. The moment he was put in charge of the Lord interests here he began to see what could be done to bring the place out of obscurity and make the native products profitable. Two years ago some New York capitalists and business men, including Erastus Wiman, Aquilla Rich, and Lawrence S. Mott, began an investigation into the merits of the Boonton slag with a view to using it as a base in the manufacture of paint. Mr. Rich, who was formerly one of the members of the big paint house of C. T. Reynolds & Co., was interested in the process of converting slag into paint, discovered and patented by James P. Perkins of Pullman, Ill. Mr. Perkins was the manager of the iron and steel works conducted by the Pullman Palace Car Company, and he had made a number of successful experiments with slag paint from the refuse of the Pullman furnaces. The Boonton slag was subjected to careful analysis by Prof. Ricketts of Columbia College, and Prof. Austen of Rutgers College. These careful chemists reported that the slag was very rich in iron, containing from 55 to 70 per cent. of pure oxide. They also discovered that in this slag the particles of iron were all incased in particles of silica or glass, which added to its value, and had prevented the slag, much of which had lain for over a century and had been subjected to every kind of weather, from corroding. On the strength of those reports a company was organized, with Mr. Wiman as president, and buildings were leased, machinery introduced, and the manufacture of paint begun under Mr. Perkins' supervision, as his patents were purchased by the company. The product has been a marked success, and Mr. Rich says it is working a revolution in the paint trade. When Mr. Nicoll had made a contract with the paint company for the delivery of the cinders at a fair price per ton, which made necessary the employment of men to dig the slag from the ancient heaps and cart it to the paint mill, he began to look around for other fields of usefulness and profit for the slag. He induced some iron furnace men to examine the material, and when Harry Villard and his German friends established the United States aluminium factory here, last spring, the slag had a big boom. Furnace and rolling mill owners were astonished to find as much, and often more, iron in this refuse material than they got out of their native iron mines in the upper part of this State and over in Pennsylvania. Instead of going to the trouble of mining the ore, here was an inexhaustible supply lying around idle, and which could be bought, delivered, and worked into merchantable products for less than the ore could be mined for per ton. That this discovery is proving profitable to the Lord estate, and is considered of inestimable benefit to the iron men, is best shown by the fact that the Pequest Furnace Company at Oxford, Warren County, sent in an order a few weeks ago for 10,000 tons of the slag, and it is being dug out and shipped by Mr. Nicoll at the rate of 1,000 tons a week. The paint company has already sold 2,500 tons, and nearly fifty men are daily at work loading and delivering the product. As it is estimated that there are over 300,000 tons in the heaps in sight here in Boonton, to say nothing of thousands of tons along the country roads hereabouts, there is no danger of the supply running short very soon. That there are other uses for this century-old slag seems certain. All sorts of experiments are being made, and several unique and interesting discoveries have already been made. It is found, for example, that pulverized slag, being absolutely fire-proof, could be used on roofs and for theatre curtains, as asbestos is now used. It is an excellent cleanser of silver and brassware, and Prof. Austen made a cake of soap out of Boonton slag recently that was quite up to the standard of ordinary soap. Whatever additional virtue may or may not be found in the old cinder beds, the uses to which it has already been successfully put are assuredly of great interest."

GUN COTTON.

HOW IT WAS ACCIDENTALLY DISCOVERED.

Usually important discoveries are the result of the expenditure of much skill and labor; but it is quite often the result of the merest "accident." Nearly every one is familiar with Goodyear's discovery of vulcanizing rubber, also the late discovery of saccharine; but the particular object of this paragraph was a reference to the accident which led to the discovery of gun cotton, which, according to a contemporary, from which we copy, has never before found its way into print. That paper says: "In 1846, Boettger and Shoenbein had a laboratory in Frankfurt, Germany, where they also gave instructions in chemistry. They resided with their families in the building where the laboratory was located and Mrs. Schoenbein, being a very economical lady, would "gather in" any odd material found lying about the laboratory. It so happened one morning that a lot of oakum, used in wiping off dishes similarly to the present use of sawdust, was found by the frugal wife, who directed a domestic to wash it and spin it at night as "recreation" after a hard day's work. This young person, by accident, fell into the embrace of Morpheus, and Mrs. Schoenbein awakening late at night and finding the light burning, rushed into the room with a candle in her hand to see what was the matter. In bringing the flame a little too close to the oakum on the spinning-wheel a terrific explosion took place, and persons appearing on the scene found both mistress and servant in a fainting condition. Upon investigating the cause the next morning, it occurred to Schoenbein that the oakum had been used to clean a large dish containing sulphuric acid and potassium nitrate used in illustrating an experinent. The acids had converted the impure cellulose oakum into pyroxylin.

DO CATS SPREAD DISEASE?

THE QUESTION OF DOMESTIC ANIMALS CARRYING CONTAGION.

A peculiar incident occurred in Indianapolis recently, says the *Sentinel* of that city. A case of diphtheria broke out in a certain neighborhood, and to insure safety from the disease the family sent their child to another part of the city to remain for a time. In this locality there was a case of scarlatina, and the little child contracted the disease, it is supposed, from playing with the cat which came from the infected house, and died from the effects. Another case is cited where children contracted the diphtheria from playing with a cat belonging to a family where the disease prevailed. Leading physicians say that while there are quite a number of single cases, the disease cannot be considered epidemic. In studying the best methods of preventing an epidemic, much attention is being paid to the question as to whether domestic animals, cats especially, do carry contagion or not. Physicians disagree in regard to this theory. Dr. H. M. Lash is of the opinion that there is no doubt that infectious diseases can be spread by animals; cats especially, by being handled by various people, are liable to carry the germs of disease in their coats, and these germs, coming in contact with a person's hands or clothing, under certain conditions develop the disease. Dr. Lash favors the opinion that clothing, money, letters, and the atmosphere will carry the disease germs, and patients afflicted with contagious diseases should be quarantined, to insure safety. Dr. Runnels holds that while the theory of a child's contracting the scarlatina from playing with a cat is possibly tenable, it is hardly probable. He has known of no such case. It is now a disputed theory among physicians as to whether the scaly particles that fall from the persons of scarlatina patients are infectious or not. It has been the general opinion that this was the most contagious stage of the disease, but experiments have shown that while in some cases these scales have proved infectious, in other cases they have not. Dr. Runnels shares the opinion of a noted Chicago physician who is considered an authority on the diseases of children. The physician, in an address, stated that certain diseases, as measles, scarlatina, and diphtheria, are peculiar to children, and all children are liable to them. He believes that if a lot of children were taken out to an island and isolated from every other human being and animal, even in the purest atmosphere they would have these diseases. Dr. Runnels is of the opinion that while a dog or cat might possibly carry a germ of disease which might prove infectious, the person would have to be liable physically to take the disease. He does not think that money is liable to carry infection, unless it has been in the mouth of a patient, and then another person takes it in his mouth. The atmosphere, too, in Dr. Runnels' opinion, can hardly be considered a medium for spreading disease from different parts of the country, since the currents of air are hardly the same outside a radius of 200 miles. Dr. T. N. Bryan has little faith in the theory that cats carry disease. While it is a possibility, it is not a probability. There are extremists in everything, and the bacteria or germ theory is carried to extremes in some cases. Thirty-five years ago diphtheria was not known. It first broke out in Pennsylvania a few years later. While there are genuine cases of diphtheria nowadays, much of the so-called diphtheria is various kinds of throat trouble. Danger of contracting disease lies more in lack of cleanliness and good sanitary regulations than in contact with the so-called germs. Contagious diseases often run through families and neighborhoods from some local cause, as bad drainage, etc.

WISE FORESIGHT.—A man came into my study last week who told me of a new method of finding a boarding-place. He went, he said, into a good meat shop and asked the butcher to tell him of the boarding-houses where he sold the best meat. The butcher gave him two places, and he at once went and engaged board. The method was new to me, but it was pretty wise. It was certainly going to the foundation of things.—*The Advance.*

SANITATION AND HEALTH.—When man contaminates his abode and surroundings, he must employ artificial means to supply that which he has taken from the purifying forces of nature. It has been shown in cities where plumbing regulations have been adopted, that the death-rate has decreased since these regulations went into effect; yet there are those who mock at sanitary plumbing.—*Sanitary News.*

SARCASTIC.—During the greater travel of the holidays I have been confirmed in an opinion that I formed long ago—that the entrance gates to the ferries, Brooklyn Bridge, and other arteries of travel should be set aside exclusively for the convenience of ladies who desire to exchange a little harmless gossip after the fatigue of shopping. As things are ordered now, the ladies seldom get a chance to settle down to a comfortable chat just in front of the ticket window before they are hustled and crowded by some blundering man, whose dull imagination sees nothing in an entrance gate but a place to get through. At comparatively small expense passages could be constructed around or over or under the entrances for the use of these unreasonable beings, and the ladies could form in line at the regular approaches and discuss the affairs of the day at their leisure.

GREASE-SPOTS FROM MARBLE.—Smear the spot with a layer of a paste of chalk and benzol (not benzin) to the depth of about an eighth of an inch. Cover with a wet cloth to prevent too rapid evaporation and leave in contact until the benzol evaporates. If unsuccessful the first time, repeat the process. Another receipt says cover the spot with quicklime and wet with an aqueous solution of sal soda. Leave in contact for several hours. Repolishing will be necessary after resorting to this process. A better plan would be to make a paste of the lime and soda lye before applying.

COMELINESS AND DIET.

THE RELATION OF FOOD TO PERSONAL BEAUTY.

Thomas Carlyle, a mighty thinker, but a man of perverse moods and a chronic dyspeptic, wrote admiringly of an ideal "eupeptic" man as one who was brave, dutiful and dominant. From the depths of his unhappy experience, a victim to the "vile hag, Dyspepsia," the rugged Scotchman perceived the immense advantage which (other things being equal) the man of good digestion possesses in the battle of life. Carlyle's hero is emphatically a strong man; but viewing him from another standpoint, we may also be permitted to affirm that he is a handsome man. This statement may seem to be made in the spirit of the time-honored adage, "handsome is that handsome does." It admits, however, of a ready explanation. For in what does personal beauty consist? What are its chief elements? We are not able, it may be said, to add to or to take from our stature, we cannot alter the contour of head and face, and cannot train features to beauty of form. These objections are perfectly valid. At this period of the world's history, after the great fusion of races, or, at least tribes, which has taken place in Europe, we cannot expect to find the ideal purity of features which distinguished the nations of classical antiquity and especially the Greeks. Perfect regularity of features, or facial beauty, from an absolutely artistic point of view, we do not look for, scarcely even desire in men. That which adorns man is the stamp of intellect and strength set upon his face. Beauty in the male chiefly consists in a well-developed form and an expressive countenance. Functionally active facial muscles perpetually responding to the impulses of an active mind give interest, variety and, in a sense, beauty, to features otherwise of an ordinary type. That intellectual pursuits bestow dignity and distinction upon the human countenance is a fact noticed in an Egyptian poem of the XIIth Dynasty, written perhaps, 2,000 B. C. But when we speak of personal beauty it is especially of women that we think. In woman a rounded outline, grace of movement, delicacy and regularity of features, fairness of skin, gloss and luxuriance of hair, carry beauty to perfection. Yet even in the "fair sex," *par excellence*, the charmed beholder seldom pauses, or cares to pause, to criticise the form of features animated with ever-varying expression. Our highest admiration is not given to the

. . . . "cold and clear-cut face, as I found when her carriage past,
Perfectly beautiful: let it be granted her: where is the fault?
All that I saw (for her eyes were downcast), not to be seen)
Faultily faultless, icily regular, splendidly null,
Dead perfection, no more;"

but to the face instinct with love, mirth and vivacity. Beauty resides in the pure skin, sparkling eye, healthy bloom, pearly teeth, ripe and smiling lips, a refined, mobile and intellectual expression. And these are not fortuitous possessions. Disregarding for the present the influence of heredity, we may confidently assert that the essential attributes of beauty depend to a very great extent on proper food or more strictly, upon proper digestion. For, as I have elsewhere pointed out, food, though abundant and nutritious, may be so poorly prepared that the appetite is not excited, the palate pleased, or digestion thoroughly performed. Perfect development depends upon perfect nutrition. It is certain that nutrition cannot be perfect unless the digestive apparatus properly performs its functions. If the normal proportion of acid and ferment be disturbed in the gastric juice, or if the liver, pancreas or intestinal glands are deranged, if inactive kidneys and constipated bowels check the elimination of deleterious bye-products, the skin loses its softness and the complexion becomes dull. The beautiful violet tinge of the sclerotic gives place to a muddy hue, the flashing eye grows dull and heavy. The cellulo-fatty tissue of the face wastes, the features grow thin and wrinkles appear. Acne, seberrhœa, eczema, urticaria, erythema or furuncles may develop upon the face, the hair is liable to become dull and thin and the teeth to decay. The angles of the mouth droop and a haggard, anxious glance replaces the frank aspect of health. Irregularity of features which was scarcely noticed when the eye was bright and sparkling, the skin pure and the complexion brilliant, now becomes painfully apparent. It is doubtless true that woman is not to be prized solely for her beauty. Nevertheless, her beauty must always be a magnetic charm and is justly regarded by herself as a valued possession. Our American women are apt to fade easily because they neglect the laws of health. Women as well as men participate in and are injured by the keen competition and ambitious struggles of our social and commercial life. Among the wealthy the whirl of society, late hours, rich food, and neglect of physical exercise, breed indigestion and its attendant ills, and art is called upon in vain to repair or cancel ravages due to defiance of natural laws. In the poor or the middle classes coarse, insufficient or badly cooked food, eaten hastily without appetite and with anxious, preoccupied mind, transform the pretty bride, all too soon, into the thin, plain, jaded mother and household drudge. Good food, well-prepared, eaten leisurely and properly digested, preserves cheerfulness, a pleasant interest in the affairs of life, health and, what is by no means least deserving of our consideration, personal beauty.—*J. V. Shoemaker, M. D., in Dietetic Gazette.*

OLD PAPERS.

A PRACTICAL SUGGESTION IN THE INTEREST OF ECONOMY AND COMFORT.

In my recent consideration about domestic economy, I have thought a long and strong plea can be made, with utility upon the uses of common newspapers, or in fact any soft paper. Greasy dishes, knives and forks can be, when collected hastily, wiped over with a newspaper and cleaned of almost all of the grease, thus making the washing much more agreeable and cleaner, and spare the frequent changing of water and reduce the labor. Pots and pans can be divested of the sooty accumulations. The mud rubbed off from boots and shoes before brushing. The kitchen table spread over with a sheet of heavy paper, or two or three folds of newspaper upon which the hot pots and kettles may be placed without soiling the table during the serving of meals. Windows can be polished and table glass made to sparkle by free use of paper; and after use for all the above things, the paper can be burned at once or used to light the fires. Nothing is better for pantry shelves or the dresser than paper, which can be easily refurnished and saves scrubbing. Newspapers fresh, and with the strong smell of printer's ink, are admirable preservators of furs and woolens if freely used, and the articles completely enveloped. The carpets will wear better and not absorb dust nearly so soon if layers of papers are laid upon the floor instead of laying the carpet upon the bare boards. In packing dresses and crushable wearing apparel nothing equals tissue paper stuffed into the sleeves and beneath the trimmings and laid between the folds of the skirt. The advantage is that paper is so light, and retains a certain amount of resistance when placed under pressure if once rumpled, and not packed in smooth layers. The cleanliness and usefulness of paper cannot be excelled. When boots or shoes are to be placed in trunks containing other wearing apparel, it is easy to renew, and always sweet. Bottles can be packed with utter safety if sufficient paper is used to enwrap each bottle separately and not too compactly. China, glass and delicate metal ware cannot be insured with greater surety against damage than by the profuse use of paper. Sawdust or cork or straw make a certain amount of litter. The cork tubular papers are good, but require a certain expenditure, and if used in quantities are expensive. Many hospitals now employ paper blankets as warm, light in weight, and readily destroyed in case of contagious or loathsome diseases. The poor can have no better benefactor in winter than paper, when they are deprived of sufficient clothing. A folded paper across the chest and abdomen under their other garments, will be found warm and comfortable, and the shivering condition relieved. At night a few papers, which can be had almost for the asking, placed between whatever meagre wool clothing in their possession, will be found most effectual and agreeable. I have frequently folded a paper, shawl fashion, across my shoulders when traveling in railway cars and thereby averted the insinuating streaks of cold air which blow through every nook and crevice of the car. Paper used in the stockings upon the feet and legs will spare great suffering from cold feet. Pride is the only reason that the poor will offer as an excuse for not availing themselves of paper for warmth, but if those in better condition of life, more favored by fortune, would demonstrate its real utility, and how comfortable they could make themselves, I am sure this stumbling-block could be put aside. They may be likewise incredulous, and this must be overcome by a practical trial. The subject of paper bed-clothing is interesting many persons who are delicate, and find great exhaustion in supporting the necessary amount of blankets, etc., in order to keep warm. I have been shown admirable bolsters stuffed with paper torn in strips which curled up, and did not pack for a long time. Cracks in walls and floors can be stopped up by using paper wetted and crowded into them.—*Family Health Journal.*

BUDDHISM.

ITS ELEVATED STANDING AMONG THE WORLD'S RELIGIONS.

In Burmah the creed of Buddhism is held pure and undiluted, more so than in Ceylon, which is a strong citadel of the faith, and far more so than in China, where it is but one of several religions, each and all under direct State patronage and protection. In no country can its effects on the popular life and conduct be studied more fairly and completely than in Burmah, and the unprejudiced observer is disposed to assign to it a very high place among those religions of the world which can be professed reasonably by reasonable persons. It stands far above Brahmanism and Mohammedanism, and compares very favorably with Christianity itself. For, as the tree is known by its fruits, so the test of the value and practical worth of a religion should be its effect on the life of its professor—whether it enables him to live successfully as a healthful, happy, and self-respecting member of a civilized community. The faith which is clouded with gloom in this world, and doubt or a selfish and exclusive beatitude in the next, is but a poor thing, and is hardly deserving of serious attention. Buddhism seems fairly well to fulfill the condition of rendering the Burman life wholesome and happy. There are, of course, many very indifferent professors who violate or neglect the rules of conduct which the founder of the creed laid down; but laxity of practice is inseparable from all professions of faith, and does not invalidate the central fact that the effect of Buddhism on the great majority of its adherents is favorable. And there can be no country where religion more deeply enters into the very fabric of the national character and influences every important action of life. How poorly do the results of Christianity show by the side of even a negative creed like Buddhism. It is loudly proclaimed by its professors to be the only saving faith, and its missionaries are sent to preach its mysterious dogmas to the uttermost parts of the earth. But on the majority of Englishmen, the most cultured and the most degraded, it exercises no influence. The mass of the working classes ignore it altogether, and the Philistine middle class, among whom it has the firmest and deepest root, do not seem under its teaching to grow less dishonest and less material. Buddhism would

probably have been unsuited to the rough Anglo-Saxon temperament, but it is curious to speculate on the change which might have befallen the destinies of the world had England accepted Buddhism and Burmah Christianity.—*Fortnightly Review.*

LAURA BRIDGMAN.

A BLIND DEAF MUTE WHO READ, WROTE, SEWED, AND TAUGHT OTHERS.

"One of the most remarkable individuals of any time was the blind deaf mute woman Laura Dewey Bridgman, who was born in Hanover, N. H., December 21, 1820, and died May 24, 1889. During the first two years of her life, her faculties were normal; but in consequence of a fever, she lost the senses of sight and hearing, and those of taste and smell were greatly impaired. She was for 5 months confined to a darkened room, and her general health was not fully restored till 18 months thereafter. Her mind was uncommonly alert and active, and she manifested keen interest in what took place around her. She contrived for herself a motion language, and soon was able to communicate her desires, and to distinguish each member of her family. When she was approaching the completion of her 8th year, Dr. Samuel G. Howe, director of the Perkins Institution for the Blind, in S. Boston, undertook her education on plans of his own, with results that have made Miss Bridgman's case world-renowned. To teach her the names of things, those names were impressed in raised type on labels, and the labels pasted on corresponding objects—as a spoon, a knife, etc. Over these labels the pupil's finger was passed, and at the same time she was taught to ascertain, by feeling, the form and properties of the objects indicated. When she gave evidence of perceiving the differences between labels, she was encouraged to take the labels and lay them upon the articles indicated by them. The next step was, to give her the letters constituting the words on the labels, in their proper order, so as to spell the several names. Then the letters were given to her indiscriminately, and she was encouraged to assemble them in such order as to spell the names of the objects. She was taught next the finger-language of the deaf and dumb, and so was put in free communication with other minds. After a few months, she wrote this letter to her mother, using a grooved sheet of pasteboard such as the blind employ: 'Laura will write letter to mother. Laura will ride with father. Laura will make purse for mother. Mother will kiss and love Laura. Laura will go home.' The order in which notions of the parts of speech were conveyed to her was this: first, as has been seen, 'concrete' nouns, beginning with the names of familiar objects; then verbs (in the active voice), the meaning of these being signified by action—e.g., *hit* table, *open* door. Adjectives came next: *hard, soft,* etc.; but not till long afterwards was it found possible to give her the idea of 'abstract' nouns, such as *hardness, bitterness,* or of *space, time.* After adjectives, she was taught the meaning and use of prepositions by tactual illustration: ring *on* box, ring *in* box, etc. 'In this case,' wrote Dr. Howe, 'the perception seemed instantaneous, and the natural sign by which she expressed it was peculiar and striking. She spelled *o-n,* and then laid one hand *on* the other; she spelled *i-n,* and enclosed one hand *within* the other.' Of course at first one form of the verb expressed the action signified by it through all the moods, tenses, and other modifications: *Water drink Laura* meant Laura is drinking, has drunk, will drink, water. Miss Bridgman was a good seamstress, executed fancy needle-work with skill, and operated a sewing-machine. She read a great deal, and assimilated the ideas which she took in through her finger-tips: thus she was able to converse without embarrassment with cultivated persons. In a brief memoir of Miss Bridgman, Mrs. Julia Ward Howe tells us that her love of conversation was such that, while feeding herself with one hand she would spell her words with the other; that she was even seen to talk with her fingers in her sleep. She 'showed a love for long words and pleonastic expressions.' She made efforts often to articulate words, and was taught to say 'doctor,' 'baby,' 'apple,' and some other words. She was fastidious in regard to her attire. Her sense of touch was wonderfully acute: 'she sometimes detected the relationship of sisters by touch alone.' Her sense of humor was always keen, we are informed by Mrs. Howe; and she enjoyed fun and pleasantry. She was of highly social disposition, and derived much pleasure from the visits of distinguished people from all parts of the world to the Perkins Institution. She was led to the bedside of her benefactor, Dr. Howe, shortly before he died: 'the touching expression of her grief,' writes Mrs. Howe, 'on this occasion, and on that of his funeral, will never be forgotten by those who saw it.' She had some experience of the pleasure of teaching, as well as of being taught. While yet herself only a beginner in the acquisition of language, she was able to assist a little girl, inmate of the same institution, whose disability resembled her own; she helped also to teach a blind mute boy the finger-alphabet; to another pupil she taught arithmetic. In her diary she congratulates herself on her success in these efforts at teaching. Though she was far removed from all danger of ever being left destitute, she was by no means indifferent to money; in fact, she studied to accumulate wealth, and hoarded the gains that she made by the sale of articles of her handiwork."—*Knowledge.*

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

January.

MEATS.—Beef, mutton, ham, kidneys, liver, venison, sausage, pork.

GAME AND POULTRY.—Grouse, hare, pigeon, quail, chicken, duck, turkey, rabbit, geese.

FISH.—Bream, cod, crabs, eels, carp, flounder, halibut, herring, lobster, mackerel, mussels, oysters, perch, rock-fish, salmon, smelt, white-fish.

VEGETABLES.—Artichokes, beets, beans, cabbage, carrots, cauliflower, celery, garlic, lettuce, onions, parsley, parsnips, potatoes, shallots, spinach, squash, tomatoes, turnips.

FRUIT.—Apples, bananas, grapes, oranges.

PRACTICAL RECIPES.

CREAM OF BARLEY SOUP.—Chop a knuckle of veal in small pieces; fry half an onion in a little butter to a very delicate shade of brown; add a dash of flour, and mix, coloring the latter; add a pint of hot water or veal broth, and season with salt, pepper, a sprig of parsley, a stalk of celery, and four bruised allspice. Put the meat and bone in a saucepan holding three quarts of water. A little mutton trimmings will improve the soup. When done, let this come to a boil, and add the contents of the frying-pan. Simmer four hours, remove scum, and strain. While the soup is cooking, wash and boil a pint of barley, rub it through a sieve, and add to the strained soup. Whisk into it half a pint of rich, hot cream, and set the soup in the warm-water pan until wanted.

SALMON SANDWICHES.—Pound one pound canned or fresh-boiled salmon to a paste, with a suspicion of cayenne pepper, a little chopped parsley, half pound butter, and a teaspoonful of anchovy paste or walnut catsup. Cut the bread very thin, spread with the paste, trim off the crust, and cut into neat little sandwiches.

SCALLOPED CODFISH.—Take some left over fresh-boiled codfish that has had drawn butter served with it; pound it up fine with some of the drawn butter, adding a few shrimps; season with salt and pepper, and add a beaten egg yolk. Butter some baking shells, fill them with the fish, sprinkle crumbs over them; then pour on a little melted butter, and brown them in the oven.

APPLE MARMALADE.—Peel your apples; scald them till they come easily from the core; weigh your apples, and take the same amount of sugar. Damp the sugar with a little water and then boil it, skimming carefully until it is a thick syrup. Put in the apples pulped from the core and boil for fifteen minutes quickly, adding six cloves and the grated rind of a lemon; take out the cloves and fill your jars.

NUT CAKE.—Two cupfuls powdered sugar, one cupful butter, one cupful cold water, four eggs and the yolk of another, three cupfuls flour, quarter of a grated nutmeg, the grated rinds of half a lemon and half an orange, juice of the orange, one-quarter teaspoon of salt, two teaspoonfuls baking powder, one pint hickory-nut meats, and one cup of raisins. Beat the sugar and butter to a cream; add the well-beaten egg yolks, and the water gradually, with the flour in which the baking powder and salt have been sifted; add the flavorings and beat thoroughly; put in the raisins and nut meats, through which a very little flour has been mixed; add, the last thing, the well-beaten whites. Beat hard for a moment and bake in a steady moderate oven for about forty minutes. This makes two cakes. When they are cold make an icing with the white of the extra egg used; flavor it with orange juice and spread on the cakes; they should be as close and fine as pound-cake if properly made.

ALMOND PUDDING.—Peel and grate finely eight or nine tart apples; blanch and pound fine half a pound of sweet almonds; mix the almonds with the grated apples; add a little nutmeg, lemon rind, and about a half teaspoon of butter, and sweeten to taste. When all these ingredients are mixed thoroughly together, add to them four well-beaten eggs. Butter well a deep dish and place the mixture in it; put in a good oven, bake until quite brown on both top and bottom, and as soon as done turn it out on a platter and eat hot with a wine or lemon sauce. If preferred cold, it is also very nice in that way. Make a sauce for this pudding as follows: To one and a half cups of water add a half-cup of wine or the juice of two lemons, and a small stick of cinnamon; sweeten to taste, and let boil for a few minutes. Then beat well three eggs and stir the sauce into them—not the eggs into the sauce, otherwise the mixture will curdle. Stir all the time while mixing. Put back on the fire after mixing, still continuing to stir until it thickens.

CONDENSED MILK.

SOME PRACTICAL RULES FOR JUDGING OF ITS QUALITY

The general appearance when poured from a spoon should be glossy; the more glossy, the better. It should be ropy or stringy like very heavy syrup. The color should be that of cream, but the color varies according to the season of the year in which the milk is condensed, the same as milk not condensed varies in color. Milk is more yellow in summer, when cows are on pasture, than in winter, when they are fed on dry hay. Thickness varies with age. Thickening by age is natural to condensed milk; rapid thickening only proves that the milk is preserved in the best manner, and that it retains in the highest degree characteristics of milk in its natural state. Condensed milk which does not thicken by age, or which thickens very slowly, is milk abused in the process of condensing. Consumers make a great mistake in supposing that the thinnest condensed milk is the best. The thinnest condensed milk contains the most water, and, of course, less of milk solids or milk nutritives. The thickest condensed milk,

Indigestion

Horsford's Acid Phosphate.

A preparation of phosphoric acid and the phosphates required for perfect digestion. It promotes digestion without injury, and thereby relieves those diseases arising from a disordered stomach.

Dr. E. J. WILLIAMSON, St. Louis, Mo., says: "Marked beneficial results in imperfect digestion."

Dr. W. W. SCOFIELD, Dalton, Mass., says: "It promotes digestion and overcomes acid stomach."

Dr. F. G. MCGAVOCK, McGavock, Ark., says: "It acts beneficially in obstinate indigestion."

Descriptive pamphlet free.

RUMFORD CHEMICAL WORKS,

PROVIDENCE, R. I.

BEWARE OF SUBSTITUTES AND IMITATIONS.

Caution:—Be sure the word "Horsford's" is *printed* on the label. All others are spurious. Never sold in bulk.

if in sound condition, is the most valuable. There is a degree of thickness, however, that is inconvenient. If condensed milk is so thick that it will not run out when an opened can is inverted, it is troublesome to dissolve. If it is not actually hard, very little stirring in the can will render it sufficiently liquid for convenient use Condensing milk, if properly done, does not destroy cream globules, but leaves the constituents of milk unaltered and natural. One method, therefore, of determining the relative quality of different samples of condensed milk is to ascertain the amount of butter that can be made from each.

OLIVES.

HOW THEY ARE PICKLED IN ITALY.

Mr. L. Paparelli, who came last year from Italy to assist Professor Hilgard in the experiment station at Berkeley, has prepared a statement for olive-growers in California concerning the methods of pickling the fruit employed in Italy. The olives must be picked by hand some six weeks before they reach maturity. The usual process is to steep them in a solution of caustic soda at the rate of about five ounces to a gallon of water. After soaking a few hours, soft water is poured upon them several times until it flows away clear, when the fruit is placed in kegs of brine consisting of one ounce of salt and thirteen ounces of water for each pound of olives. When they are preserved without lye, the olives are placed in a wooden vat and submerged in pure water covered with lemon leaves. The liquid is changed every hour for a month, after which the fruit is placed in vats, with first a layer of salt, then one of olives, then salt again, the proportion being twelve pounds of salt to a hundred pounds of olives. After remaining in the salt for two days clean water is added, and another layer of an inch of salt is placed on top, and in a month after this treatment they are fit for use. The olives

CLEVELAND'S SUPERIOR Baking Powder.

The Official Reports of the
United States Government, 1889,
Canadian Government, 1889,
New Jersey Commission, 1889,
Ohio Food Commission, 1887,
prove that Cleveland's is

THE STRONGEST

of all the pure* cream of tartar baking powders.

*Ammonia or alum powders, whatever their strength, should be avoided as injurious.

25 CTS. PISO'S CURE FOR CURES WHERE ALL ELSE FAILS. Best Cough Syrup. Tastes good. Use in time. Sold by druggists. CONSUMPTION 25 CTS.

RIDGE'S FOOD The MOST RELIABLE FOOD For Infants & Invalids. Used everywhere. *Not a medicine*, but a steam-cooked *food*, suited to the weakest stomach. Pamphlet free. Woolrich & Co., (on every label), Palmer, Mass.

Buffalo Lithia Water, Spring No. 2, in Bright's Disease, Gout, Stone in the Bladder, and Diseases Generally of Uric Acid Diathesis, Etc., Etc.

DR. WM. A. HAMMOND, of Washington, D. C., Surgeon General U. S. Army (retired), Professor of Diseases of the Mind and Nervous System in the University of New York, etc.

"I have for some time made use of the BUFFALO LITHIA WATER in cases of AFFECTIONS of the NERVOUS SYSTEM, complicated with BRIGHT'S DISEASE OF THE KIDNEYS or with a GOUTY DIATHESIS. *The results have been eminently satisfactory.* Lithia has for many years *been a favorite with me in like cases, but the* BUFFALO WATER CERTAINLY ACTS BETTER THAN ANY EXTEMPORANEOUS SOLUTION of THE LITHIA SALTS, and is, moreover, better borne by the stomach. I also often prescribe it in those cases of CEREBRAL HYPERÆMIA resulting from OVER MENTAL WORK—in which the condition called NERVOUS DYSPEPSIA exists—*and generally with* MARKED BENEFIT."

DR. WM. B. TOWLES, Professor of Anatomy and Materia Medica, in the Medical Department of the University of Virginia.

"BUFFALO LITHIA SPRINGS, No. 2, belongs to the ALKALINE or, *perhaps, to the* ALKALINE SALINE Class, *for it has proved far more efficacious in many diseased conditions than any of the simple* ALKALINE waters.

"*I feel no hesitancy whatever in saying that in* GOUT, RHEUMATIC GOUT, RHEUMATISM, STONE *in the* BLADDER, and in all diseases of URIC ACID DIATHESIS, *I know of no remedy at all comparable to it.*

"*Its effects are marked in causing a disappearance of* ALBUMEN *from the urine. In a* single case of BRIGHT'S DISEASE *of the* KIDNEYS, I witnessed *decided beneficial results from its use, and from its action in this case I should have great confidence in it as a remedy in certain stages of this disease.* In DYSPEPSIA, especially that form of it in which there *is an excessive production of* ACID *during the process of nutrition*, in some of the PECULIAR AFFECTIONS *of* WOMEN, notably in SUPPRESSION of the MENSES, and in CHRONIC MALARIAL POISONING, etc., I have found it highly efficacious."

DR. G. HALSTEAD BOYLAND, late Professor of Surgery, Baltimore Medical College, late Surgeon French Army (Decorated), Member Baltimore Academy of Medicine, Member of American Medical Association.

"In BRIGHT'S DISEASE of the KIDNEYS, ACUTE or CHRONIC, BUFFALO LITHIA WATER, Spring No. 2, is, in my experience, *without a rival*, whether in the PARENCHYMATOUS form or INTERSTITIAL NEPHRITIS. In cases in which the ALBUMEN in the URINE reached as high as 50 per cent., I have known it under a course of this water gradually diminish and finally disappear, at the same time other alarming symptoms were relieved and the sufferers restored to health.

"In STONE in the BLADDER of the RED LITHIC ACID and the WHITE PHOSPHATIC DEPOSIT, the SOLVENT power of this water is *unmistakable*."

Water in cases of one dozen half gallon bottles, $5.00 f. o. b. here.

THOS. F. GOODE, Proprietor, BUFFALO LITHIA SPRINGS, VA.

are improved by placing aromatic herbs like fennel among them after the first treatment.—*Garden and Forest.*

BUSINESS NOTES.

DEAN'S ARDENTER MUSTARD.

The best known house in the mustard trade of this country is that of W. G. Dean & Son, whose factory occupies a large building at the corner of Washington and North Moore Streets, this city. The house was founded by J. D. Herron and William G. Dean, in 1852. Mr. Herron had been engaged in the manufacture of mustard in England for twenty years previously. He operated a very large factory in London and sold its products all over Europe. In 1851 he sent for a number of samples of American-made mustards and found them decidedly inferior to those of English manufacture. This discovery satisfied him that there was an opening for the manufacture of good mustard in the United States. He sold out his London business and transferred his capital to his country. Capt. Ludlow, the chief officer of the steamship Ariel, one of a line owned by Commodore Vanderbilt on which Mr. Herron came to this country, brought Mr. Herron and Mr. Dean together. The latter was then associated with the old established clothing house of Brooks Brothers, who were at that time located on the corner of Water and Catharine Streets. The result of their introduction was a proposition made by Mr. Herron that the two should enter into the manufacture of mustard by the old English process, which had been so successful in Europe. This consisted of drying the mustard seed in a kiln until the fixed oil had been thoroughly dried out. Then it was passed through steel rollers and the flour separated from the bran by the old style bolting-cloth sieves. Afterwards the flour was allowed to stand for six days in large boxes in order that the chemical action set up by exposure to the atmosphere might darken the flour to the regulation hue. Herron and Dean were successful from the start in placing their goods with many of the large jobbing houses in New York, Baltimore, Philadelphia and the New England cities. In the summer of 1854 Mr. Herron died. Mr. Dean bought out the interest of his deceased partner's widow and continued the business in his own name. In 1855 he invented an improved process for separating the mustard flour from the hulls or bran, which saved a great deal of labor. This consisted in putting about two thousand pounds of mustard seed into large vats and allowing it to soak there for twelve hours. Afterwards it is put through the processes above described. Owing to the soaking thus received the bran is much more easily removed from the flour—in fact a saving of 60 per cent. in labor is made. In 1860 Mr. Dean made still further improvements in the process of manufacture. By these means the fixed oil is separated from the essential oil by hydraulic pressure This fixed oil is very valuable as a condiment for salads and for use in feeding signal lights in very cold climates where other oils chill and thicken. In 1870 he invented a third process for manufacturing mustard by heat, which has proved very valuable, and is protected by patents granted by the English and American governments. Mustard manufactured by this process will keep in any climate. It is the variety so generally known as Dean's Patent Ardenter Mustard. The flour is cooked in a kettle provided with a jacket filled with live steam. Thus every particle of moisture is expelled from the flour, and when properly cased it will keep indefinitely, even at the equator. No other mustard made has this quality. In 1877 Mr. Dean added the manufacture of mass and stick licorice to his business. His inventive genius enabled him to make many improvements in this branch. In consequence, the business grew so rapidly that for more than a year past the firm have been from sixty to ninety days behind their orders. Their pure Calabria, branded D. & S., is made from the finest imported Spanish mass. Besides the D. & S. Calabria they also manufacture several other brands of stick licorice, also various kinds of licorice lozenges and tablets for the druggists' and confectioners' trade. They also sell to the former trade root licorice in bundles of various weights.

DISEASE VEHICLES.—The French medical journals have lately told of another instance in which diphtheria appears to have been transmitted from animals to man, this time from pigeons. One of these birds died, and the veterinary surgeon found post mortem that diphtheria had been the cause of death. From this bird, his owner, his daughter and a child were infected.

GAS AND ELECTRICITY.—The plan of using gas in small electric arcs to increase their power at a less expense than that of extra current has been effectively carried out by means of hollow carbons. An added cost of 6 per cent. is said to give in this way a light equal to one and one-half times that of the ordinary lamp.

RUSSIAN DOCTRESSES.—Russia now allows female physicians to practise in all parts of that empire. They will wear a badge of their profession, and can practice in female schools and institutions admitting women, in similar institutions of the Zerustvos, and are especially exempted from calls as experts to attend criminal trials.

QUEER LAW.—The *Alabama Age* states that the law regulating registration in that State was so curiously worded that, though the Supreme Court has decided that illegal practitioners are criminals, they cannot be punished. An effort is being made to remedy this omission, but is opposed by the practitioners who do not belong to the regular school.

SOAP FROM CORN.—It is claimed that an eastern chemist has discovered a process of making soap from corn. The discovery has excited considerable attention, and promises to give not only a new corn market but to revolutionize the art of soap-making. The soap made from corn is said to be absolutely pure, and better than the finest toilet soaps made.

ARTIFICIAL TIMBER.—An invention which is designed to supplant nature is a substitute for white pine. The rapid disappearance of the white pine is a solid fact, and it will not be many years before such an invention will have a practical value. The substitute for timber, as indicated, will be found in smaller trees, reduced to pulp; and pressed in moulds into the sizes and shapes wanted.

MICROBES IN HAIL.—The *British Medical Journal* states that Dr. Fontain, a Russian observer, has recently demonstrated the existence in hailstones of pernicious microbes or microscopic organisms. The water resulting from the melting of the stones used in the experiments yielded an average of 729 bacteria to the cubic centimeter (a volume about the size of a small marble). Nine different forms of bacteria were discovered, including the bacillus mycoides.

OZONE.—An electrician the other day said: "A simple and almost perfect method of purifying the atmosphere of crowded apartments, such, for instance, as railway cars, is to produce ozone by electrical sparks, and the practice has been strongly recommended by the highest medical authorities. The delightful freshness and vigor which is perceptible in the air after a series of sparks from an ordinary influence machine is a proof of the salutary and refreshing influence produced.



A HIGH-GRADE PIANO
AT A VERY MODERATE PRICE.
NEW DESIGNS. FANCY WOODS.
Terms Easy. + Monthly Instalments.
TWO, THREE AND FOUR PEDALS.
Catalogues, Prices, Terms, Etc., sent to any address.
EVERY PIANO WARRANTED 5 YEARS.
(Mention this Paper.)

Sura Cura
ROBINSON'S
SURE CURE
FOR
RHEUMATISM
And NEURALGIA.
And remedy for diseases arising from an impure state of the blood. An antidote for MALARIA. Price 50 c. and $1. Sent by mail on receipt of price
Send for Circular.
R. W. ROBINSON & SON,
184 Greenwich Street,
NEW YORK.
Sura Cura

Fine Table Wines
From our Celebrated Orleans Vineyard.
Arpad Haraszthy & Co.
Producers of the
ECLIPSE
CHAMPAGNE,
530 Washington St.
SAN FRANCISCO.
GENERAL AGENCIES:
NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOSEPH R. PEEBLES' SONS CO., 73 West Fourth Street.
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.



(The Worcestershire.) LEA & PERRINS' (The Worcestershire.)
SAUCE.
IMPARTS THE MOST DELICIOUS TASTE AND ZEST TO
HOT AND COLD MEATS, GRAVIES, SALADS, SOUPS, GAME, FISH, WELSH RAREBITS, Etc., Etc.
Signature on every bottle of the genuine and original.
Lea & Perrins
JOHN DUNCAN'S SONS, NEW YORK.

THE N. Y. HAY EXCHANGE BULLETIN.

OFFICIAL REPORT OF THE HAY AND STRAW MARKET AT NEW YORK.

COMMISSION SALESMEN.

NOTICE.

These names are arranged alphabetically.

WM. AFFLECK & CO.,
Commission Merchants in
HAY AND STRAW,
Office No. 5,
N. Y. Hay Exchange Building.

J. ALSDORF,
Commission Dealer in
HAY AND STRAW,
33d Street and 11th Ave.,
NEW YORK.

E. A. DECKER. F. W. TOMPKINS.
DECKER & TOMPKINS,
Commission Merchants in
HAY, STRAW, GRAIN,
Office: 16 New York Hay Exchange Building.

L. S. DILLENBACK. T. O. PECK.
DILLENBACK & PECK,
MAIN OFFICE:
Room O, N. Y. HAY EXCHANGE, N. Y. City.
STOREHOUSE AND BRANCH OFFICE:
101, 103 and 105 North 5th St.,
and 152 and 154 Berry St.,
Palmer's Dock. Brooklyn, E. D.

EDWIN B. DUSENBERRY,
COMMISSION MERCHANT,
And Wholesale Dealer in
HAY, STRAW AND GRAIN.
No. 1, N. Y. Hay Exchange, New York.

THOS. FONDA & CO.,
Commission Merchants
And Dealers in Hay, Straw, Grain and Country Produce,
13 & 14 N. Y. Hay Exchange Building.

N. A. FULLER,
COMMISSION MERCHANT IN
HAY AND STRAW,
33d Street and 11th Ave.,
NEW YORK.

THEO. P. HUFFMAN & CO.,
COMMISSION MERCHANTS
In Hay, Straw, Grain, Feed, &c.,
648 & 650 West 34th Street,
Bet. 11th & 12th Aves., N. Y.

H. B. Jenkins. F. S. Williams.
JENKINS & WILLIAMS.
COMMISSION MERCHANTS IN
HAY, STRAW AND GRAIN,
HAY EXCHANGE.

The N. Y. Hay Exchange is located at 601 W. 33d St., corner 11th Avenue.

Only the cards of members of the N. Y. Hay Exchange appear on this page.

RULES FOR GRADING HAY AND STRAW

As Adopted by the N. Y. Hay Exchange.

CHOICE OR PRIME HAY—Shall be pure timothy, properly cured, bright, natural color, sound and well baled. No. 1—Shall be timothy, not more than one-eighth (⅛) mixed with "red top" properly cured, bright natural color, sound and well baled. No. 2—Shall be timothy, not more than one-quarter (¼) mixed with red top and blue grass, properly cured, good color, sound and well baled. No. 3—Shall include all timothy not good enough for No. 2, proportionately mixed with blue grass, red top, and clover, sound and well baled. SHIPPING—Shall include all hay not good enough for other grades, and may be natural meadow, free from wild or bog grass, and must not contain over one-third (⅓) clover, sound and well baled. CLOVER MIXED—Shall include all hay containing not over two-third (⅔) clover, and one-third (⅓) timothy, properly cured, sound, and well baled. CLOVER—Shall be medium grown, properly cured, good color, sound, and well baled. NO GRADE OR REJECTED HAY—Shall include all hay badly cured, musty, stained, or in any way unsound.

No. 1. RYE STRAW—Shall be clean, bright, long Rye, in bundles, sound, well and securely baled. No. 2—Shall be long Rye, in bundles, sound, well and securely baled. SHORT RYE—Shall be clean, not bundled, sound, well and securely baled. OAT STRAW—Shall be clean, bright, sound, well and securely baled.

In the New York market bale-wood is weighed in without tare. In all other markets it is deducted.

These quotations for choice, No. 1 and No. 2 hay are for large bales. 5c. per cwt. less when in perpetual press bales.

The New York quotations are per cwt. At other points, per ton.

NEW YORK, Jan. 12, 1891.

The following are the market prices to-day at New York.

	New York.
Fancy Hay	65c. @
No. 1	60 @
No. 2	55 @
No. 3	50 @
Shipping	45 @
Clover mixed	45 @ 50
Clover	40 @
Prime Rye Straw	90 @
No. 2 "	75 @ 80
Oat and Wheat	45 @ 50

Receipts week ending Jan 10, as follows:
Via N. Y. Central, 145 cars.
" West Shore, 153 "
Total, 298 cars.
From other roads by Lighter to 34th Street, 6 cars.

The market has undergone a decided change for the last few days. Trade has shown more activity, and the accumulation of stock mentioned in our last issue has been about cleaned up. The receipts at present are moderate and demand equal to the supply, except hay in perpetual bales, which is in poor demand, and selling slowly at fully $1.00 per ton less than large bales of the same quality. Our highest quotation is 65c., but a strictly fancy article would probably bring 70c. should any of that description come forward just now. Other grades are firmer, with a very slight advance in price, and unless the receipts become heavier the outlook is more encouraging.

Rye straw in good demand at prices quoted.

OSCAR KENT,
Commission Merchant,
HAY AND STRAW,
Room 20, New York Hay Exchange Building.
Personal attention guaranteed all consignments

JOHN KERWIN & SON,
DIRECT RECEIVERS OF
HAY, GRAIN and GENERAL PRODUCE
DEPOT AND STOREHOUSES,
Palmer's Dock, Nos. 97 & 99 North Fifth Street,
BROOKLYN, N. Y.
SHIPPING ADDRESS, PALMER'S DOCK, BROOKLYN, N Y
West Shore R. R., N. Y. C. & H. R. R. R., N Y L. E. & W. R. R., Pennsylvania R. R., D. L. & W R. R., Lehigh Valley R. R., and connections.

W. J. OVEROCKER. PERRY HATCH.
OVEROCKER & HATCH,
Commission Merchants in
HAY, STRAW AND GRAIN.
33d Street & 11th Avenue, New York.
References: West Side Bank, New York City; Exchange Bank, Holly, N. Y.

Gilbert Plowman, NEW YORK. Spencer Billington, FORT HUNTER, N. Y.
PLOWMAN & BILLINGTON
COMMISSION MERCHANTS,
HAY, STRAW, GRAIN, &c.
No. 15 N. Y. Hay Exchange,
33d St. & 11th Ave., NEW YORK.

JAMES ROZELL & SON,
Commission Merchants and Wholesale Dealers in
HAY, STRAW, GRAIN AND COUNTRY PRODUCE.
N. Y. Hay Exchange, New York.

SKINNER, BLOOM & CO.,
Successors to Rogers, Skinner & Co.,
COMMISSION MERCHANTS
And Dealers in
Grain, Flour, Hay, Feed, Meal, &c.,
74 CORTLANDT STREET, - NEW YORK.
Barge GYPSIE, Foot Bridge St., Brooklyn.

H. SLINGERLAND,
Barges MERCHANT and HARVEST QUEEN
Foot of West 11th Street,
HAY AND STRAW.
Also, 33d and 35th Streets, and all Railroad terminals. Special facilities for lighterage free goods.

CHARLES F. SWAN,
Commission Merchant in
HAY, STRAW & GRAIN,
At all the Railroad Terminals in New York, Brooklyn, Jersey City, &c.
MAIN OFFICE,
108 BROAD ST., NEW YORK.

TITUS, WELLS & WILLETS,
Commission Merchants and Dealers in
HAY AND STRAW,
133 Roosevelt St.,
NEW YORK.

VAN ALSTYNE & CO.,
COMMISSION MERCHANTS.
SPECIALTIES:
HAY, STRAW & FLOUR,
Nos. 2 and 4 Stone St., New York.
Liberal advances made on consignments.

G. E. Van Vorst. James M. Hillery.
VAN VORST & CO.,
COMMISSION MERCHANTS,
HAY, STRAW AND GRAIN
N. Y. Hay Exchange, 33d St., & 11th Ave.
562 & 564 West 34th St., NEW YORK.

NOTICE.

These names are arranged alphabetically.

HOSMER, CRAMPTON & HAMMOND,

NO. 43 COMMERCIAL STREET,

BOSTON.

COMMISSION MERCHANTS,

HAY, STRAW, FLOUR & GRAIN.

E. B. HOSMER, G. W. CRAMPTON, BENJAMIN HAMMOND, A. L. ROBINSON.

BOSTON HAY AND STRAW MARKET.

Hay, choice to fancy in large bales	$14.50 to $15.00
Hay, choice to fancy, perpetual pressed bales	13.00 to 14.00
Hay, fair to good	12.50 to 13.00
Hay, poor to ordinary	10.00 to 12.00
Hay, Clover and Clover mixed	10.00 to 11.00
Hay, swale	9.00
Straw, Rye, good to prime	17.50 to 18.00
Straw, Oat	9.00 to 10.00

BOSTON, Jan. 10th, 1891.

Receipts for the week are 389 cars of hay and 26 cars of straw; corresponding week last year, 201 cars of hay and 23 cars of straw. Receipts for the past week have been large and the stocks unsold have accumulated. The market is quiet and weak. Quotations are somewhat nominal, as prices would be shaded if free sales could be effected thereby. Rye straw is very firm; some sales are made at $18.50.

H. F. WILSON,
WIRE BALE TIES,
458 WEST 38th STREET, New York.



HAMMOND'S
CELEBRATED
Calumet Oleomargarine

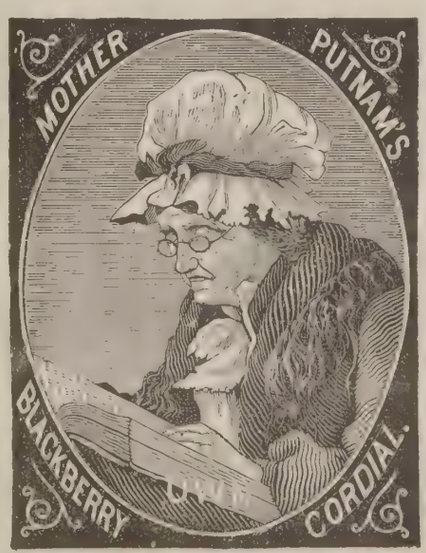
Strictly pure, cheap and healthful.
Ask your grocer for it.
Put up in packages of all sizes, also prints and rolls.

G. H. HAMMOND CO.,
607 to 615 THE ROOKERY,
CHICAGO.

Also offices at Boston, South Omaha, Neb., and Hammond, Ind.

40 COUPON OFFERS and our large Illustrated Catalogue of **SCROLL SAWS**, Tools, Designs, and **30 Cts. WORTH** of *full size* **SCROLL SAW DESIGNS**, sent **FREE** for **10 Cts.** in stamps to pay postage.
JOHN WILKINSON CO., 369 State St., Chicago.

NATURAL MINERAL PURGATIVE WATER.
From the Springs of
VILLACABRAS.
Prescribed by the Highest Medical Authorities.
Stronger effects than any other under smaller volume. No smell—no repulsive taste—no after-constipation—no gripes. As a daily laxative it can be taken, either pure or mixed with milk, tea or broth.
Sold by all Good Druggists.



C-U-R-E-S
DIARRHŒA, DYSENTERY,
MALARIA,
all ailments of the bowels. Is an anti-dyspeptic, and a **DELICIOUS INVIGORATIVE.** Leading Physicians prescribe it for **ADULTS AND CHILDREN.** *FOR SALE* by Druggists and dealers.
RHEINSTROM BROS., DISTILLERS OF FINE LIQUEURS,
54, 56, 58, 60, 62 E. 3rd STREET, CINCINNATI, O.

HARTSHORN'S SELF-ACTING SHADE ROLLERS
NOTICE SCRIPT NAME OF Stewart Hartshorn ON LABEL, AND GET THE GENUINE
HARTSHORN

GOLD MEDAL, PARIS, 1878.



W. BAKER & CO.'S
Breakfast
Cocoa
from which the excess of oil has been removed,
Is Absolutely Pure and it is Soluble.

No Chemicals
are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

THE GREAT AMERICAN TEA COMPANY

LADIES

GET UP ORDERS. Entire New Departure. A HANDSOME PRESENT TO EVERY SUBSCRIBER.

THE GREATEST INDUCEMENTS EVER KNOWN TO INTRODUCE OUR NEW GOODS.

If you enjoy a cup of **Delicious Tea** send in your orders 3½ lbs. Fine Tea by mail on receipt of $2 and this "ad". Beautiful premiums given away with $5 orders and upwards. The **most extraordinary bargains** ever offered, during the next thirty days. China Tea Sets and Lamps with $10, $15 and $20 orders to introduce our excellent **New Crop Teas.** Formosa and Amoy, Oolong Congou English Breakfast, Japan, Imperial, Young Hyson, Gunpowder, Sun Sun Chop and Mixed. Good mixed teas 20c. per lb. Headquarters in United States for Fine Teas. One pound of our tea will go farther than three pounds of trash. Thirty years' national reputation for selling **Pure Goods Only.**

THE GREAT AMERICAN TEA COMPANY,

P. O. BOX 289. 31 and 33 Vesey Street, New York.

Be progressive and keep abreast of the times. Avoid dyspepsia by using **Lard Compound** and **Cottolene,** a substitute for lard.

The highest medical authorities pronounce them healthful; and expert cooks commend them.

Our **Clairette** brand of cotton oil soap is the purest and best laundry soap in the market; as pleasant to the hands as genuine castile.

N. K. FAIRBANK & CO.,

CHICAGO AND ST. LOUIS.

Books

New Issues every week. Catalogue, 96 pages *free.* *Not* sold by Dealers; *prices too low.* Buy of the Publisher,

JOHN B. ALDEN,

393 Pearl Street, New York.

THE LABORATORY.

To Inventors, Manufacturers and Applicants for Patents

The AMERICAN ANALYST may be consulted upon all matters involving theoretical or applied chemistry. Advice and opinions given. Analyses and assays made. Patents perfected and secured. Terms reasonable.

Address, AMERICAN ANALYST,

10 Park Place, N. Y.

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,

HOWARD STREET, BOSTON, MASS.

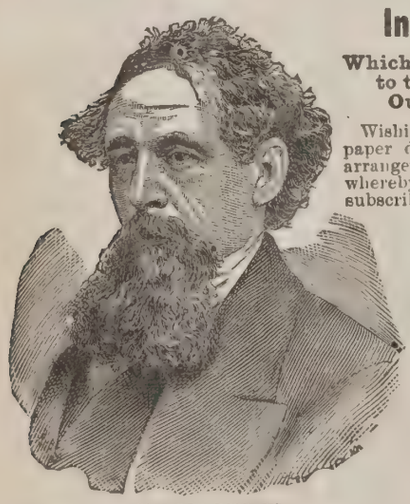
GRAND PREMIUM OFFER!

A SET OF THE

WORKS OF CHARLES DICKENS,

In Twelve Large Volumes,

Which we Offer with a Year's Subscription to this Paper for a Trifle More than Our Regular Subscription Price.



CHARLES DICKENS.

Wishing to largely increase the circulation of this paper during the next six months, we have made arrangements with a New York publishing house whereby we are enabled to offer as a premium to our subscribers a **Set of the Works of Charles Dickens, in Twelve Large and Handsome Volumes,** with a year's subscription to this paper, for a trifle more than our regular subscription price. Our great offer to subscribers eclipses any ever heretofore made. Charles Dickens was the greatest novelist who ever lived. No author before or since his time has won the fame that he achieved, and his works are even more popular to-day than during his lifetime. They abound in wit, humor, pathos, masterly delineation of character, vivid descriptions of places and incidents, thrilling and skillfully wrought plots. Each book is intensely interesting. No home should be without a set of these great and remarkable works. Not to have read them is to be far behind the age in which we live. The set of Dickens' works which we offer as a premium to our subscribers is handsomely printed from entirely new plates, with new type. The twelve volumes contain the following world-famous works, each one of which is published *complete, unchanged, and absolutely unabridged:*

DAVID COPPERFIELD,
MARTIN CHUZZLEWIT,
NICHOLAS NICKELBY,
DOMBEY AND SON,
BLEAK HOUSE,
LITTLE DORRIT,
OUR MUTUAL FRIEND,
PICKWICK PAPERS,
BARNABY RUDGE AND CHRISTMAS STORIES,
OLIVER TWIST AND GREAT EXPECTATIONS,
THE OLD CURIOSITY SHOP AND THE UNCOMMERCIAL TRAVELER,
A TALE OF TWO CITIES, HARD TIMES AND THE MYSTERY OF EDWIN DROOD.

The above are without question the most famous novels that were ever written. For a quarter of a century they have been celebrated in every nook and corner of the civilized world. Yet there are thousands of homes in America not yet supplied with a set of Dickens, the usual high cost of the books preventing people in moderate circumstances from enjoying this luxury. But now, owing to the use of modern improved printing, folding and stitching machinery, the extremely low price of white paper, and the great competition in the book trade, we are enabled to offer to our subscribers and readers a set of Dickens' works at a price which all can afford to pay. Every home in the land may now be supplied with a set of the great author's works.

OUR GREAT OFFER

TO SUBSCRIBERS

TO THE

AMERICAN ANALYST.

We will send the **ENTIRE SET OF DICKENS WORKS,** *in* **TWELVE VOLUMES,** *as here described, all postage prepaid by ourselves, also* **THE AMERICAN ANALYST** *for* **ONE YEAR,** *upon receipt of* **$1.50,** *which is only* **50** *cents more than the regular subscription price of this paper.* Our readers, therefore, practically get a set of Dickens' works in twelve volumes for only **50** cents. This is the grandest premium ever offered. Up to this time a set of Dickens' works has usually been $10.00 or more. Tell all your friends that they can get a set of Dickens' works in twelve volumes, with a year's subscription to **THE AMERICAN ANALYST** for only **$1.50.** Subscribe now and get this great premium. If your subscription has not yet expired, it will make no difference, for it will be extended one year from date of expiration. We will also give a set of Dickens', as above, free and post-paid, to any one sending us a club of three yearly subscribers.

ADDRESS:

THE ANALYST PUBLISHING CO.

No. 10 PARK PLACE,

NEW YORK.

Tabasco Pepper Sauce

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced, by connoisseurs, to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY,

NEW IBERIA, LA.

For Sale by all Wholesale Grocers.



All New Subscriptions sent now will be good until January, 1892.

NATRONA BI-CARBONATE OF SODA.

ABSOLUTELY PURE.

The nature of the raw material from which NATRONA BI-CARBONATE OF SODA is made—viz., kryolith, a mineral containing *pure sodium*—insures a purity and uniformity of product which cannot be obtained from any other known material. In making BI-CARB. SODA from any other raw material, the use of sulphuric acid is a necessity, but none is used in any part of the process of making NATRONA BI-CARB.; hence its entire freedom from the slightest trace of arsenic, which is always present in ordinary soda. Its absolute purity and entire freedom from all traces of *sulphate of soda*, common salt and other impurities, render NATRONA BI-CARB. NEARLY TASTELESS, and being bolted through the finest bolting-cloth, insures the finest stage of division.

To these indisputable facts the attention of CONSUMERS of soda is specially called. They are IMPORTANT, and should influence both those who use and those who sell soda, to buy and sell NONE BUT THE BEST.

The NATRONA BI-CARB. Soda is kept in stock by almost every wholesale druggist and grocer throughout the United States, of whom it may be ordered.

Natrona Bi-Carb. Soda is unequaled by any other brand of English or American Manufacture.

PENNA. SALT MANUFACTURING CO.,

NATRONA CHEMICAL WORKS. PHILADELPHIA, PA.



ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

"BILLET"

are

Carefully Selected

French Sardines,

Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS.

DR. PRICE'S CREAM Baking Powder.

Most Perfect Made

A Pure Cream of Tartar Powder—
Superior to every other known.
Used in Millions of Homes—40 Years the Standard.
Delicious Cake and Pastry, Light Flaky Biscuit, Griddle Cakes
Palatable and Wholesome.
No other baking powder does such work.

Vigoral

FOR

STRENGTH, NOURISHMENT AND REFRESHMENT.

PREPARED BY

ARMOUR & CO.,

CHICAGO,

From their celebrated EXTRACT OF BEEF, further strengthened in muscle-forming constituents by the addition of pure beef in powdered form.

Vigoral is seasoned ready for use and makes a delicious hot drink for cold weather.

SWIFT'S

CHOICE

Chicago Dressed Beef

AND

MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,

UNION STOCK YARDS,

CHICAGO, ILLS.

We shall be glad to supply our readers with any periodical published at club rates.

Send us a postal naming periodical and we will quote you prices.

ANALYST PUBLISHING CO.,
19 Park Place, New York.

GLENN'S SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

Beware of Counterfeits.

Wholesale Depot,

C. N. CRITTENTON,

115 FULTON STREET,

NEW YORK.

The Standard of Excellence.

KINGSFORD'S

OSWEGO

Pure and Silver Gloss



STARCH

KINGSFORD'S
OSWEGO CORN STARCH
FOR
Puddings, Custards, Blanc-Mange, Etc.
THE PERFECTION OF QUALITY.
WILL PLEASE YOU EVERY TIME.
Always ask your Grocer for these goods.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 4. NEW YORK, THURSDAY, JANUARY 22, 1891. WHOLE No. 204

American Analyst,

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - $1 per year.
Single Copies, - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.

Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.

Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,

H. LASSING, M. D., } Editors.
T. P. McELRATH, }

No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

Agate and Onyx 39
Beef Extract 41
Butter, Vegetable 40
Domestic Dietetics 41
Editorials 37
American Pork in France; The Electric Motor; The Valley of Death; Good Cookery.
Glass Eyes 40
Hay Market Official Bulletin 44
Healthful Homes 39
Kirschwasser 41
Legal Hospitalities 42
Oil and Lead 38
Platinum 40
Ropes 38
Street Boilers 41

AMERICAN PORK IN FRANCE.

The French Chamber of deputies is considering a proposition imposing an import duty on lard of fourteen and twelve francs, according to quality. This action indicates that one more step has been taken towards the readmission of American pork products into France, from which country they were absolutely shut out by the decrees of February, 1881, and December 27, 1883; those decrees having continued in force ever since the latter date, except for a short interval in 1883, when the products were allowed to pass through the Custom House. Heavy duties have been placed upon the products, as was to be expected. But the main or rather the only object sought to be attained has been the readmission of American pork products into France, thus freeing them from the imputation of unwholesomeness, which has injured them in the opinion of other European countries. That was the only point laid down in the diplomatic documents and explanations sent by the United States Minister in Paris to the French Government; and it appears that this policy has been successful, at least in regard to the Customs Committee of the Chamber of Deputies, which some time ago adopted a schedule of duties on hams, fresh pork, and other products of the American hog. The duties are certainly rather high, but that fact increases the probability that they will be voted by the Chamber, and will be lowered after the present ultra-protectionist mania shall have disappeared from French minds. It seems that the great point at issue, the repeal of the prohibitive decrees, and the readmission into France of the American hog, slandered and shut out for the last ten years, has been accomplished.

THE ELECTRIC MOTOR.

The universal application of electric power to practical uses was recently summed up graphically by a writer in the *Sun*, who says: "In some cities, so far has the use of electric motors gone, that it is possible for a man to-day to drink at breakfast coffee ground, and eat fruit evaporated, by electric power. During the morning he will conduct his business with electrically made pens, and paper ruled by electricity, and make his records in electrically bound books, his seventh story office, in all probability, being reached by an electric motor elevator. At luncheon he will be able to discuss sausages, butter and bread, and at night eat ice cream and drink iced water due to the same electrical energy. He will ride all about the place in electric cars, wear shirts and collars mangled and ironed by electric motors, sport in a suit of clothes sewn and a hat blocked by the same means; on holidays ride a merry-go-round propelled by an electric motor, or have his toboggan hauled up the slide with equal facility; be called to church by an electrically tapped bell, sing hymns to the accompaniment of an electrically blown organ, be buried in a coffin of electric make, and, last of all, have his name carved on his tombstone by the same subtile, mysterious, all-persuasive and indefatigable agency. This may sound like a wild and exuberant flight of fancy, but it is simply a faithful statement of the manner in which electricity is being applied to every one of the necessities and luxuries of life in America."

THE VALLEY OF DEATH.

There is a region somewhere in Colorado known as the Death Valley. It was recently reported from Washington that the Secretary of Agriculture is engaged in organizing an expedition for its exploration, the locality being a veritable *terra incognita*. The heat there is so intense that dead animals do not decompose. Water in the valley is unknown, and the expedition will carry water and food for mules and men. It is a question whether the animals will be able to survive the expedition. Two of the chief botanists of the department are at present working their way into the valley from southern Nevada, while another expedition is on the march from southern California. The two expeditions are expected to meet, if nothing goes wrong with them, at a point previously decided upon in the valley. Professor Merriam will take charge of the expedition. There is reason to believe that there are rich gold and silver mines in the region named. A story is told of an adventurous miner who some years ago penetrated into the valley and found the skeleton of a miner. A wooden pail was lying near it, and in it a chunk of gold of great value. On his return to California he showed his find to a group of miners. Their cupidity was so excited that, other means failing, they tortured him to make him confess where he had found the gold, believing that he had discovered a gold mine, the location of which he would not reveal. The scientific men with the expedition will map the country and procure specimens of such animals and insects as exist there, if any do exist. Secretary Rusk regards the expedition as of great importance.

GOOD COOKERY.

Cooking, as a practical process, is as laborious as it is necessary, and though not sufficiently appreciated as an art, it is nevertheless one that requires more talent, tact and qualifications than many accomplishments the possession of which may seem to make the possessor appear more brilliant and attractive. To be a good cook does not always compel actual practical labor at the range, though a good cook can only acquire this quality by practice; but possessing the requisite knowledge, it makes the possessor at once independent, and able to command assistants and servants, and intelligently to superintend and manage the household. At first sight it appears very easy to cook food, but when all the conditions essential to the task are considered, it will be seen that a good cook has a field of operations wherein there is no end to possibilities of discovery and invention, where all the elements of nature have to be contended with, in which all the human senses have to be pleased, while a continued change of nature's production is constantly taking place. In truth, success depends upon a great number of external circumstances apparently beyond our control. Nevertheless, it is a fact that those who possess natural taste for the work, and have a love for order, punctuality and cleanliness, may quickly learn to be good cooks; and as in all other things so in this, practice makes perfect. It is true that the practical art is more quickly learned by actual practice, yet it is important for a good cook to know of what the material to be used is composed, and how the nutritious portions can be best preserved and brought into use. This attainment requires study and theoretical knowledge. For instance, rice and beef are both nutritious substances, yet being different in their chemical composition, require different treatment; for what would

help the nutritious qualities and the palatableness of one might do the very opposite for the other. There is much to be learned in this branch; books are the keys which open the door of knowledge. A thorough understanding of a subject removes false impressions and replaces them with correct and positive information. We can learn what and how much nature supplies for our proper food, and how we can best employ art and knowledge to assist nature in her beneficent mission. It will be seen what a precious jewel the possession of a theoretical and practical knowledge of cooking is. If we had more housewives possessing this knowledge, we would have many more happy, contented households, and much less dyspepsia.

ROPES.

WHAT MAY BE SEEN IN A LARGE CORDAGE FACTORY.

The December issue of the *Cordage Trade Journal* contained an interesting description of a factory in Brooklyn, from which we condense the following: When the hemp is unpacked from the bale in which it has arrived the first process it goes through is the oiling. This is done by two machines, which are capable of oiling 30,000 pounds per day. Each of these machines consists of a row of ten fluted rollers, outside of which at the beginning and end are steel cylinders. The first cylinders receive the hemp as fast as a man can throw it in front of them, and they pass it to the fluted rollers under a stream of oil, which flows from a tank on the cylinders. As the fibres rush swiftly along the fluted rollers work the lubricant in and the hemp comes out at the end pretty thoroughly oiled. Then it goes to the scutching machine, the work of which is to clean and separate and straighten the tangled fibres to a certain extent. This scutching machine is a big wooden cylinder, three or four feet broad and about eight feet in diameter. It is covered with thin steel spikes four inches long; these spikes are set with a downward declination, so that as they are carried upward on the cylinder they do not catch the hemp squarely on their points, but rather scratch or scutch it. This process is quickly performed A handful of hemp is thrust in, the spikes scratch it for a few moments, it is then withdrawn and thrown on the floor ready for the next process, which is that of spreading. The spreading machine is a curious one. It consists of two endless bands, called chains, each about two feet wide, set end to end in a framework of iron. The whole face of each of these bands is covered with similar spikes to those on the scutching machine. As the hemp enters through the steel cylinders to which it is fed, the upright spikes upon the first of the endless bands catch hold of it and carry it slowly along until it reaches a point in the middle of the machine, where the spikes of the second band seize it. This second band is traveling about ten times as fast as the first one, and the consequence is that when it catches the hemp it draws it swiftly away from the first band, straightening out the fibres and evening it—that is making the thickness equal. The hemp goes through other spreading machines before the fibres are sufficiently straight and disentangled to be fit for spinning. The spreaders also perform another duty as the hemp passes through them: they comb it out to as fine a thread as is needed for the twine, cord or rope to be made.

When the straightening and spreading have been successfully accomplished, and the hemp is reduced to a thread of the required thickness, it is taken to a spinning-jenny, where it passes through a nipper and over capstans and into a flyer. It gets a twist in it here and passes on to a bobbin in the jenny which reels it up very swiftly. When it leaves this jenny it is a yarn fit to be used for any kind of rope or twine. The threads or slivers of hemp can be made of any thickness, the spreading process controlling that. If they are to be used for rope they usually run about 300 feet to the pound, and 600 feet to the pound for twine.

The general idea of a rope-walk is a large, low shed, built on a country meadow, where land is cheap and the railroad near enough to carry the product to the large cities. When a rope-making concern decides to do their work in a city, it is very evident that a long, low building would need a strip of land worth many thousands of dollars, and for this reason Messrs. Tucker & Carter decided to make their rope where the right of way could be secured at a much lower figure, and their idea was carried out by tunnelling under the high-priced surface of the city earth, where buildings could be put over their burrow. Longfellow wrote of the rope-walk:

"In that building long and low,
With its windows all a-row
Like the portholes of a hulk,
Human spiders spin and spin
Backward down their threads so thin,
Dropping, each a hempen bulk."

In the days of which Longfellow wrote ropes were made by man power. The rope-maker wound the hemp about his body, and walking backward twisted the strands as he moved away from the bobbin which held the hemp. This bobbin was usually held by a boy, and when all the hemp was unrolled the boy would knot the end to a new thread and keep the workman constantly supplied with material. The name rope-walk was in those days in no sense a misnomer. Man power was afterwards replaced by horse power, and about the year 1850 steam power was utilized for the first time. The rope-walk of the Tucker & Carter Cordage Company is a tunnel 1,200 feet in length. This tunnel is lighted by windows set in the side, for the earth on each side has been dug away from the low brick building, and a wall of bricks, removed about four feet from sides of the walk, follows its course throughout. Down in this well-lighted tunnel the men who make ropes work. Their apparatus consists of an iron car, on the rear end of which a drum is set upright. From the circular face of this drum hooks project, forming a ring around this rim. From a number of bobbins set in a stationary frame threads are connected to one of the hooks, while, may be, another of the hooks, or perhaps two others, are similarly employed. Then the car carrying the drum in which the hooks are set is started, and retreats away up the rope-walk, pulling the threads from the bobbins as it goes. Each hook is then seen to be nothing less than a swivel, which turns swiftly, twisting all the threads on each hook into one strand. These strands can be made of any thickness, according to the number of threads used in them, but no less than two threads will form a strand for rope-making, and often as many as a hundred are necessary. Three of these strands form a rope, the thickness of which, of course, is altogether governed by the thickness of the strands. In twisting, the rope loses about twenty per cent. of its length, and comes out little more than 1,000 feet long. If greater length is needed, it is necessary to use big machines, which the factory employs for that purpose. They are stationary, and they reel up the rope as fast as made. The largest ropes made here are about four inches in diameter, but if anything bigger were required it could be turned out. These big ropes are used for cables for the larger vessels. They are tarred by the threads which compose them passing through a trough in which boiling tar is foaming. Small ropes, such as clothes lines, are made by machines called formers and layers. A number of yarns from a frame of bobbins pass into the former, which twists them into a strand which is afterwards taken to the layer, where it is united with two similar strands and twisted into a rope which is reeled up as fast as made. This process also is the one by which all three-strand cord is made. Beside the main building, in which only harvest twine is made, there is a rope factory for small rope, a building where the jute is worked, another for the sisal, a blacksmith shop, a well equipped machine shop, where the firm repairs all machinery; a tar-house, where ropes for vessel rigging are tarred; a stable, several storehouses, and the rope-walk. Some of these buildings mentioned are almost as large as the main building, and, together, they make up quite a town. At present, if all the departments of the factory are working to their fullest extent, they can produce twenty-five tons of harvest twine, twelve tons of rope yarn, and five tons of jute yarn per day. It takes 270 jennies with 540 spindles to do all the work required. Two engines, one of five hundred and the other of three hundred horse power, run the machinery throughout the premises. All sizes of twine, cord and rope are made in the manufactory mentioned, but the harvest twine leads the way in point of quantity. Its manufacture was only begun in 1880, five hundred tons being the total output of it for that year. In the brief time which has elapsed since then it has rolled itself into a wonderfully large business, as shown by the figures given above. It displaces wire, which was formerly much used for harvesting. Wire fastened the sheaves all right, but it had its drawbacks. It insisted on following the sheaf into many places where its presence was not an unalloyed blessing. It got into the mills, and, in fact, is accused of causing the great fires at Minneapolis by this trait. It also got into the cribs, and was eaten by the cattle, greatly to their edification, no doubt, and it likewise worked its way into the ground, and interfered with the farmers' ploughing operations. Many attempts were made to produce an article which would bind as well as the wire, and at the same time equal it in cheapness.

OIL AND LEAD.

A NEW COMBINATION OF COTTON SEED OIL AND MOLTEN LEAD.

In a suitable metallic vessel of something more than one gallon in capacity is placed one gallon of pure cotton seed oil. There are now melted in a furnace in a suitable crucible or ladle twenty pounds of pure lead metal, care being taken that the entire quantity of the lead is in the molten state, which will insure a temperature thereof of not less than 334 deg. of heat Centigrade. In this molten state the lead is then poured gradually in the one gallon of cotton seed oil, care being taken that the mixture is well stirred during the process of pouring, in order that, as far as possible, each molecule of the molten lead will be exposed to the action of the cotton seed oil. In this process of pouring the molten lead, as soon as the hot and molten metal strikes the surface of the oil, it follows the law common to all molten metal when thrown in a liquid and separates into very minutes globules, the bright and pure surfaces of which are brought in immediate contact with the cotton seed oil, and by the heat therefrom impart such affinity to the cotton seed oil in immediate contact therewith that a certain part of the lead will be absorbed by the cotton seed oil, which, when removed from the influence of the heated globule of lead, will immediately cool sufficient to retain therein the lead thus absorbed. When the entire twenty pounds of molten lead have been thus poured in the gallon of cotton seed oil, it is allowed to remain some little time to cool off, after which the oil is drawn off, and there will be found remaining in the bottom of the vessel in various forms about seventeen pounds of the pure lead, thus showing that in this one process of pouring about three pounds of lead have been absorbed by the one gallon of cotton seed oil. The remaining seventeen pounds of lead is now removed from the vessel, and the gallon of cotton seed oil, that has now about three pounds of lead therein, is returned to the vessel. The remaining seventeen pounds of pure lead is again heated and brought to the molten state, in which condition it is again poured in the cotton seed oil contained in the vessel, the same care being observed in stirring the mixture during the process of pouring as in the first pouring of the metal. After this second process of

pouring the molten lead in the cotton seed oil the mixture is allowed to cool sufficiently, when the oil is again drawn from the vessel, and there will now be found remaining about fifteen pounds of pure lead, thus showing that in this second process of pouring the molten metal two pounds of lead additional have been absorbed by the cotton seed oil, which will now contain about five pounds of lead combined therewith. This process of remelting the remaining lead, and again pouring and mixing it with the same cotton seed oil is continued with advantage up to the fifth time of pouring the molten metal, after which the cotton seed oil will be found to have absorbed about ten pounds of the lead, after which there seems to be no further affinity of the oil for the metal. As soon as the cotton seed oil has been brought to this stage it is allowed to thoroughly cool, when its consistency will be about that of ordinary paint. The compound is now in condition to be applied to those surfaces that it is desired to protect against corrosive or deteriorating influences, and may be applied with a sponge or brush, as in the application of ordinary paint. In applying the compound its adhesiveness will cause it to adhere tightly to the surface coated therewith. It is preferred to apply one coat and then allow it to remain about forty-eight hours, during which time it will have become sufficiently hard to resist ordinary abrasion, and after which a second coat may be applied with advantage. Philip Helbig and Hermann Bertling, of Baltimore, Md., are the authors of this new article and process. They say: "It has been found in practice that no other of the known oils, other than cotton seed oil, possesses the quality of absorbing the lead when treated as herein described, and that the cotton seed oil possesses the quality of absorbing certain proportions of other metals when poured therein in the molten state in the manner herein described. As stated, the compound may be employed to protect metallic surfaces of any kind, and is claimed to be particularly useful for coating the bottoms of iron or steel ships to protect the surface thereof from rust and the adherence thereto of barnacles and other marine life. It is likewise of equal benefit for the protection of wooden surfaces that are to be buried in the earth or exposed to the action of water —such as fence-posts, piles, etc."

HEALTHFUL HOMES.

SOME GOOD ADVICE ON AN IMPORTANT THEME.

A cemented floor under the whole area of a house is a sanitary necessity, because the "air in soils" is more or less impure at best. There is no excuse for building underground apartments in the country. They are never wholesome anywhere, and if families are compelled by stringent reasons to live in the city, where basement dining-rooms and underground kitchens are the rule, they should endeavor to have an upper sitting-room and live in it as much as possible. The very placing of a house on any ground and living in it, under ordinary circumstances, causes suctions into its interior of impure soil air, because the air of the house is warmer than the air beneath it, and this induces a rush of the cold air to the warmer house atmosphere. The concreted floor will, in a great measure, do away with this difficulty, but not altogether. Ventilation of cellars must, therefore, be attended to, no matter how clean and perfectly built they may be, in town or country. Annual lime whitewashing, an old custom, is decidedly a wholesome precaution, and every cellar should thus be treated, especially in the autumn, as the cellar will be kept closed more than in spring and summer. Very important are the floors, woodwork, walls, and ceilings of a house. Their condition influences in a greater degree than might be imagined the health of the family. There cannot be a doubt that papered walls are not wholesome, that is, if the paper is of the ordinary kind in use, which is highly absorbent. There is a paper made, I think, in England, called "sanitary paper," which has a finely glazed surface, which may be scrubbed without injury to its texture or colors. This paper is probably as free from the objection named as any texture could be. This paper is much wider than the ordinary wall paper, and as it is very strong and durable, does not cost more in the long-run than ordinary wall paper, even if the first outlay is more than that expended for the less expensive grades of ordinary wall paper. Painted walls are the best for all living rooms, that is sitting-rooms and bed-chambers. They are also best for dining-rooms, where there are always so many odors of food to absorb. Stained and varnished woodwork or else painted woodwork should rule, as neither is absorbent. The floors, especially, should never be left in the natural state, and I should advise all builders of houses to have their floors painted before living over them, where they are to be carpeted or otherwise covered, and stained and varnished where the intention is to show a portion or all the surface. These measures, renewed as wear necessitates, will prevent your house attaining that peculiar smell which is associated with old boards almost invariably, no matter how often or how vigorously they have been scrubbed by the neatest housewife. Part of this smell, indeed all, is due to the decay of absorbed matters, which in some cases include disease germs. Paper may be varnished, however, and thus rendered non-absorbent. As it is not the privilege of every one to move into a perfectly new house and do just as they please, one must say a word to those who, unhappily, are obliged to live in houses of other people's building and ownership. To insure healthy conditions in an old house, go to work and do all possible cleaning with soap and soda and water. Strip down all old papers from the walls. Sometimes there will be found as many as six different layers of dilapidated paper of different colors and designs. To remove old paper, wet it all over with a damp cloth from time to time, so that the water will soak through, and in an hour or two it will be so loosened that one may peel off the layers with comparative ease. The walls should all be washed down with soda and water, and it will be well to add a little carbolic acid to insure the better purification of the apartment. The ceilings, too, are very important, and should, if possible, be painted, or at any rate thoroughly cleaned and given a fine coat of tinted lime-wash. Loosely laid floors become a source of evil smells, and a hiding-place for vermin and disease germs. Hence it is well worth the expense to have new floors tongued and grooved and blind-nailed, and old floors taken up, planed, and relaid, blind-nailed, then painted with two coats of paint. Old floors, having finished their shrinking, will not again give any trouble by reason of open seams to collect dirt and noxious substances.

AGATE AND ONYX.

SUPPOSED ORIGIN OF PEECIOUS STONES OF COMMERCE.

Geology has been a revelation to mankind, and has told us wonderful things of the past history of the earth; but geology has secrets of its own that are as hidden from comprehension as the atmosphere of the moon or the belts of Saturn. Certain things have been done, says the geologist, through volcanic action or the agency of fire, and that is as near as he can come to it; so that, after all, we see effects, but know little or nothing of causes. There is a rock known as amygdaloid, one of the igneous rocks, which in some of the gigantic transformations of nature, we will say in cooling from a melted state, formed within itself cavities from the size of a marble or bead to that of the closed hand. Now, as nature abhors a vacuum, she sets to work to fill these cavities, and in doing so she used other materials, and these combinations produced some of what we call the "precious stones of commerce." Exactly how this was done we cannot tell, but we see some hint of the operation in every subterranean cave where stalactites and stalagmites are found. Every student knows that this is the result of dropping water which contains carbonate of lime. The water evaporating leaves a minute particle of lime, which takes something to itself from the earth or atmosphere, and in the course of ages bodies have formed of a most remarkable character. In probably somewhat the same fashion have these cavities been filled in the igneous rocks, and then comes time and storm, and other agencies, earthquakes, perhaps, and the rocks are rent apart, and out drops a bead or a bowlder, and a curious man picks it up, and hammers and breaks it, and then he puts a polish on it by some process more or less advanced, and lo! he holds in his hand an agate or an onyx. Many of the stones used in the arts have no other origin, and are deposits of silica, alumina, oxide of iron, and other coloring substances. It is the color or arrangement of colors that gives the name, and thus we have agate, onyx, chalcedony, carnelian, sard, chrysteloprase, sardonyx, and others, all members of the quartz family, and all having a family resemblance. The agate has veins of different shades of color in parallel lines. Sometimes these are very close together, as many as fifty to the inch, but this is unusual. When there are alternate bands of color and a transparent medium we have the onyx, but the latter may be obtained by cutting the stone in a differeut way. Agates are used chiefly for ornamental purposes, such as cups, seals, rings, handles for parasols, table and mantle ornaments, but the material is so hard that it can only be worked by those who have practiced skill. The onyx was valued by the ancients for its application to cameos and intaglios—the first an object in relief, the latter a "cut-in" process; and these objects are still made. Nature produces some very strange forms occasionally, and agates are found with exact resemblances of moss and other natural objects and figures, which are very curious and often very valuable.—*The Great Divide.*

HYALINE.—A "horny, translucent, plastic composition of great tensile strength and considerable elasticity, which may be used as a cheap and inodorous substitute for celluloid, and can be worked, dyed, pressed, denitrated, and rendered incombustible or fireproof." "Hyaline" is a mixture of about equal parts of gun cotton and colophony, or shellac, copal, dammar, turpentine, or of any mixture of these resins.—*F. Eckstein, Plastic Compositions.*

AMERICAN ILLITERACY.—In our country three-fourths of the nation's illiteracy is in the South. Forty per cent. of the whole population of the South cannot read the New Testament. Of the 2,000,000 illiterate voters in our country, 1,500,000 are in the South; The negro population, now about 8,000,000, increases at the rate of 500 per day. Among the more than 2,000,000 mountain whites in the South one-half cannot read. Of the 50,000 Indian children, less than 15,000 are in school. The Chinese in America are few, but they represent one-third of the population of the globe.

A RED NOAH.—The present Messiah craze among the Indians of the North, West and Northwest revives interest in anything that pertains to the queer delusions and beliefs that have been rife among the different tribes for the past century. It is remembered now that in 1883 the Saupoels, a small tribe in what was then Washington Territory, became greatly agitated over the teachings of an old chief who professed to believe that another flood was near at hand. He said that the Great Spirit had commanded him to collect tribute and build an ark that would outride the waves. His great canoe, 112 by 228 feet, is still to be seen in an unfinished condition near one of the tributaries of the Columbia.—*St. Louis Republic.*

PINEAPPLE FIBRE.—Still another textile material, says an exchange, bids fair to rival jute. This time it is the pineapple fibre, and R. Blechynden, of Calcutta, is attempting to awaken interest to the great economic value of this product. The pineapple has long been cultivated for its fibre in India, while it is manufactured into a cloth in the Philippines and woven into linen in China. But more recent investigations show that when subjected to the process of bleaching, the fibre becomes pliant enough to be spun like flax and by the same machinery. The fibre can be subdivided into threads of such delicacy as to be barely perceptible and yet sufficiently strong for any purpose.

VEGETABLE BUTTER.

A SINGULAR PRODUCT OF THE COCOANUT.

A recent number of the *Kew Bulletin* contains an article on cocoanut butter, a valuable edible fat prepared from the kernel of the cocoanut and recently introduced into commerce. It is a white, odorless, almost tasteless fat, which solidifies at about sixty-five degrees Fah., becoming above that temperature a pure white oil. "If cocoanut butter can be prepared, as is suggested, from the ordinary 'copra,' or dried kernel of the cocoanut, as shipped from tropical countries, there would be an almost unlimited supply of the raw material available from various parts of the world." According to Dr. Zerner, of the Royal Imperial and General Hospital in Vienna, "The cocoanut butter, which, on account of its low melting point, is exported in tins, furnishes a pure white transparent mass of the consistence of lard, without granular texture, which at a temperature of seventy-nine degrees Fah. melts to a clear fluid and solidifies again at sixty-seven degrees Fah. It has a slight agreeable smell, melts on the tongue, leaving a mild but in no respect acrid taste behind it. In ether it dissolves completely. If the ether is evaporated over water, and distilled water is added to the residue, the solution gives a neutral reaction. I have often repeated this test with cocoanut butter which had remained open for days (fourteen days), also with pharmaceutic preparations eight to fourteen days old, in the preparation of which cocoanut butter had been used. The cocoanut butter is, therefore, free from fatty acids, and even if left open for the space of eight to fourteen days does not turn rancid, with the exception of the top layer which comes in contact with the air. With regard to its chemical composition, cocoanut butter differs from most other fats, and particularly butter, lard, and margarin. In its fatty constituents, and the amount of volatile fatty acids, it stands next to butter among solid fats. Cocoanut butter differs from all other vegetable and animal fats by its saponification degree (258.5 according to Rud. Benedikt in Vienna), and on account of this high saponification degree all adulteration is impossible. Artificial digestion tests seem to show that the cocoanut butter exercises no injurious influence whatever over digestion. The next point was to ascertain how the cocoanut butter stands with regard to micro-organisms. It is well known that in this respect milk butter is very far from perfect, as apart from the numerous germs, which for the most part are not pathogenic, that may be introduced during its preparation, and the microbes already present in the milk itself, this article of food affords an excellent nutrient fluid for a large number of micro-organisms. It follows that although in any given case other ways and means of infection may be excluded, this may still take place through the agency of milk and butter. The possibility of a transfer to the human consumer of the tubercle bacillus, as well as of other micro-organisms, which have got into the milk from animals suffering from infectious diseases, is in the case of cocoanut butter a vegetable fat, excluded from the first. Cocoanut butter has been proved by our investigations to be both free from germs and also to be a very bad nutrient medium for micro-organisms. Even when agar-agar or Ceylon moss (*Gracilaria lichenoides*) was mixed with the cocoanut butter, and then allowed to remain open, the number of germs was found to be less than in agar-agar without the mixture of butter. One more experiment may be mentioned. If sterilized milk is added to cow butter and kept at a warm temperature, the milk coagulates in twenty-four hours, proving the presence of bacteria in the butter. This coagulation does not take place if, instead of milk butter, cocoanut butter is added to the milk. From what has already been said, the conclusion may safely be drawn that the cocoanut butter, from a chemical and bacteriological point of view, meets all the requirements of a food substance. Our further investigations were directed to ascertaining whether cocoanut butter was suitable to healthly and sick people alike. Through a period of four weeks we distributed food to 116 patients in the form of pastry, roast meats, and farinaceous foods, in the preparation of which cocoanut butter was used in the place of fats. On account of this fat being almost free from water, one-quarter less may be taken, both in baking and cooking, than is generally used, if ordinary butter or lard is employed; and for the same reason it is necessary, in making pastry, to replace the twenty-five per cent. of water which the cocoanut butter contains, less than any other fat, by adding from seven to eight tablespoonfuls to about every pound of butter used. A little more salt must be added to the food, and the butter must always be heated before being used for cooking. Foods prepared in this way, as well as pastry, were always found to be eaten without any inconvenience whatever. The taste was undoubtedly pleasanter than in dishes prepared with animal fats. The statement of a colleague, Dr. H., is of particular importance in this respect. After recovering from disorder of the stomach he could not eat pastry without being afterwards troubled with pyrosis and cardiac pain. He could eat pastry prepared with cocoanut butter almost without any inconvenience. The experiments with patients proved cocoanut butter to be an easily digested fat, that causes no disorders in cases of impaired digestion. Of the 116 patients, among whom were individuals affected with every form of dyspepsia, not one complained of any discomfort, or of any ill effect after the consumption of pastry prepared with cocoanut butter, though pastry, as a rule, is not an easily digested food on account of the fat. In three cases where the pastry was partaken of an hour after vomiting, there were no ill results noticeable; on the contrary, a fresh supply was desired by the patients. We arrive at the conclusion that a fat has been found in cocoanut butter which meets all hygienic requirements, and which is far superior to animal fat and butter, as well as to any of their other substitutes. Further, on account of its being easily digested, cocoanut butter is particularly well adapted for the use of patients suffering from impaired digestion."

GLASS EYES.

HOW THEY ARE MANUFACTURED IN PARIS.

The Paris trade in glass eyes must be a very rich one, for every week there are nearly a thousand enamel eyes made in Paris. The important manufacturers, the scientific men, the artists of the profession, inhabit the Faubourg St. Honoré and the neighborhood of the Madeleine. They travel all over Europe, and transport their manufactures to St. Petersburg, Vienna, and even Constinople. The sumptuously furnished salons in which they receive their clients in Paris indicate connections among the wealthier classes. They generally select a one-eyed servant, replacing the organ of which he is deficient with one of the best articles of their manufacture.

When a client, a little frightened, perhaps, at the prospect of an operation, hesitates about confiding an eyelid to the instruments of the operator, the latter rings a bell, and Jean Polyphemus makes his appearance.

"What do you think of this fellow?" asks the operator of his client. "Study his features, and tell me frankly what you think."

"He looks well enough," answers the other, a little hesitatingly.

"Well, Jean, reveal your secret to this gentleman."

Whereupon Jean introduces a knitting-needle under his eyelid, removes his eye, and places it in the hand of the astonished spectator as unconcernedly as though it were a shirt-stud.

The cabinets of the larger Parisian dealers contain thousands of samples of eyes, all slightly varying, the one from the other. Some are small, others large, some black, others blue, hazel brown, light brown, bluish and greenish gray. There are laughing children's eyes, the liquid looking eyes of young girls, the languid eyes of middle-aged women, eyes with an amiable or sinister expression, severe official eyes, or the slightly filmy eyes of old men. Many of the French dealers, too, keep eyes which they loan out by the week or month, or even for special occasions; and there is a constantly accumulating stock of eyes which have been returned because they would not fit some fastidious customer. The manufacture of artificial eyes consists of three very distinct operations. Before the artist, who is seated at a table, is a lamp, the flame of which, blown by a bellows moved by the foot, gives a pointed jet of the strength he desires, and within reach of his hand are placed rods of enamel of different colors. He begins by taking a hollow tube of colorless crystal, one of the extremities of which, being soon melted by the fire of the lamp, forms a ball when blown. As the color given by the crystal has no resemblance to that of the sclerotica, usually called the white of the eye, the first labor is to color the ball in such a manner that it may be of the same tint as the natural eye. To attain this result he applies to the ball enamels of different colors, which, amalgamating with that of the crystal in a pasty state, gradually give it the natural tint of the eye. This obtained, he makes a circular opening in the centre of the ball destined to receive the pupil and iris. The artist begins on the iris, which is formed by the use of several amalgamated enamels. The iris finished, he places in its centre a spot of black enamel. This is the pupil, which he encircles with its areola, and he concludes by drawing those infinitely small fibres which are found in the iris. The globe of the eye being completed, it remains now to place it in the centre of the ball. Nothing is more simple. The hole made in the ball, which becomes the sclerotica, having been calculated according to the size of the eye globe, it is placed in it, and soldered by means of the lamp. This done, and the artist's finishing touches having rectified the small imperfections of the whole work, it only remains to pare this ball in order to obtain the eye shell. No mould of any kind is used, the breath and hand of the artist being alone employed. Each artist, by-the-bye, is persuaded that he alone possesses the best formula for producing the most limpid enamels, whose colors are most like those of nature.—*Chatter.*

PLATINUM.

ITS QUALITIES AND COMMERCIAL VALUE.

The market value of platinum is at the present moment nearly equal to that of gold, their respective prices being $20 and $20.75. Eighteen months ago platinum was to be had for about $7.50 an ounce, and six months ago the price was under $15. Apart from the question of a possible "corner," and the ever-increasing demand for platinum for electrical purposes, this 166 per cent. rise in price within eighteen months may be attributed in a large measure to the increased cost of production at the mines in the Ural mountains, whence we draw our chief supply of the metal. The owners of these mines, owing to their large yield of gold, were able to sell platinum comparatively cheaply; the gold, however, is now becoming scarce, and hence the platinum, which is still plentiful, can no longer be sold at so low a figure. Platinum, besides being used for the leading-in wires of glow lamps, is largely used for electrodes in electro-chemical work, and up to the present no satisfactory substitute for it has been found so far as these applications are concerned. The history of platinum is as interesting as its characteristics are remarkable. During the sixteenth century it was observed that the gold ore from the Darien mines included grains of a whitish metal. This discovery was not made known by the Spanish government, because it found that it furnished an excellent material for adul-

terating gold. It was only about the middle of the last century that the metal began to find its way into Europe. The Ural mountain deposits were discovered about 1823, and they have been worked by the Russian Government since about 1828. Platinum is generally found in small grains, but masses of considerable size have been discovered; thus in 1822 a specimen, which weighed 11,641 grams, from Condato, was placed in the Madrid Museum. Platinum was coined by Russia to the extent of half a million sterling between 1826 and 1864, when the coinage was discontinued. Almost all platinum contains iridium, which greatly increases its hardness and durability without impairing its power of resisting chemical agents. Liebig said that "without platinum crucibles, which share the infusibility of porcelain with the chemical inertness of gold ones, the composition of most metals could not have been ascertained, and chemistry could not have come to its present level." One of its most important uses is for large evaporating stills for the concentration of sulphuric acid. A still of this kind, valued at nearly $20,000, exhibited at Vienna in 1873, was capable of concentrating 20,000 pounds of sulphuric acid daily. This particular use for platinum has to a large extent been discontinued, and at one time the quantity of platinum thus set free caused a decline in its market value.

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

January.

MEATS.—Beef, mutton, ham, kidneys, liver, venison, sausage, pork.

GAME AND POULTRY.—Grouse, hare, pigeon, quail, chicken, duck, turkey, rabbit, geese.

FISH.—Bream, cod, crabs, eels, carp, flounder, halibut, herring, lobster, mackerel, mussels, oysters, perch, rock-fish, salmon, smelt, white-fish.

VEGETABLES.—Artichokes, beets, beans, cabbage, carrots, cauliflower, celery, garlic, lettuce, onions, parsley, parsnips, potatoes, shallots, spinach, squash, tomatoes, turnips.

FRUIT.—Apples, bananas, grapes, oranges.

PRACTICAL RECIPES.

STEWED TERRAPIN.—Boil the terrapin; take out the meat and liver, carefully remove the gall, intestines and sand-bag. If there are any eggs save them, cut up the meat and liver and put them in a dish with the eggs; add a good lump of butter and seasonings of salt and cayenne, cover the dish and let it get very hot, then add a gill of fine madeira and serve.

A BOUQUET FOR SOUP.—Place in a bunch two sprigs of parsely, a leek, and a piece of celery; put in the centre of the bunch a bay leaf, a few cloves, some thyme and garlic; now double the bunch up so as to enclose the spices and tie with strong twine.

SWEETBREAD CROQUETTES WITH PEAS.—Boil four sweetbreads, chop them very fine and pound them to a paste, season with salt and pepper and add the yolks of two eggs, two ounces of butter and a tablespoonful of cracker crumbs; moisten with a gill of cream, roll it into balls or cork shape forms, dip these in beaten egg; roll in crumbs; repeat the last process and fry in boiling fat. Arrange a border of green peas around them and serve.

FRIED SWEETBREADS WITH TOMATO SAUCE.—Boil the sweetbreads; when cold cut them in slices. Dip the slices in egg and crumbs and fry in plenty of hot fat; arrange neatly on a hot plate, pour a thick tomato sauce around them and serve.

TOMATO SAUCE.—Stew a can of tomatoes with half an onion and four whole cloves. When quite tender remove the onion and cloves, and mash the tomatoes through a colander; add salt and pepper to taste and a cup of beef stock, and a teaspoonful of butter; thicken to the consistency of thick cream with flour, cook for a few moments and serve.

VEAL PIE.—Cut about a pound and a half of cold cooked veal into small pieces; cut up fine half a pound of ham or lean bacon; chop some parsley, a few mushrooms and a quarter of a small onion, and fry them in a teaspoonful of butter; season with salt, pepper and catsup; add a cupful of gravy or water and thicken a little with flour; boil up, remove from fire, add three teaspoonfuls lemon juice. Put a layer of veal in a baking-dish, pour some of the sauce over it, then put on a layer of ham, some more of the sauce, and so on until the dish is filled. Cover with a good crust and bake.

TAPIOCA PUDDING.—Soak as many tablespoofuls of tapioca in as many cups of milk as will be needed, for two hours, then add to it the yolk of an egg for each cup of milk, sweeten and add a little salt; pour into cups and bake for fifteen minutes, then serve with preserved peaches.

MOLASSES CANDY.—Two quarts molasses, two pounds brown sugar, one cupful cold water, one cupful butter; flavor with lemon oil.

KIRSCHWASSER.

THE DISTILLATION OF CHERRIES IN GERMANY.

The manufacture of kirschwasser is carried on very extensively in Switzerland and Germany. A great deal is distilled in the famous Black Forest and in other sections where cherries are plenty. The word, if literally translated, means cherry-water. For its distillation both black and red cherries are used, but the former are preferable, as they produce a spirit of finer quality. The cherry-trees are not specially cultivated, although, as the farmers realize more or less money from them, considerable attention is given to their growth and flourishment. The process of manufacture is something like the following: The cherries are first carefully cleansed, great importance being attached to that point; the stems are then removed, and the fruit packed in very thick wooden casks and left to ferment for a period of from five to eight weeks, according to the weather, after which it is ready for distillation. In large distilleries the stills contain ten or twelve hectoliters, while in the smaller ones the quantity varies from those figures to half a hectoliter. The large distilleries, with one or two exceptions, make use of indirect steam as means of heating, the stills being constructed with double bottoms, through which steam passes; the others employ naked fires, the fuel consisting of peat or the refuse of cherries and pears after distillation, which is compressed into bricks and dried. Both modes of heating have numerous advocates, who each claim the superiority of their system. Kirschwasser is put on the market in liter bottles, in carboys containing from 10 to 60 liters, and in casks. All distilleries, it is said, even the best, with few exceptions, adulterate their kirschwasser by the addition of cheap spirit of wine or spirit of potatoes. This liquor is exported to a considerable extent, and it is now a common thing, in our first class hotels and saloons, to hear orders for kirschwasser. The principal markets for the spirits are North America, South America and British India. France also imports large quantities of Swiss kirschwasser.

STREET BOILERS.

A PARISIAN NICKEL-IN-THE-SLOT HOT WATER SCHEME.

In Paris they now have stands on the streets, a faucet projects from the structure, and under it a place to set a pail. Near the faucet is a slot, large enough to admit a copper five centime piece, and beside the slot is a button. To use the apparatus, a pail is set in the appropriate place, a five centime piece, equivalent in size and value to the old-fashioned copper cent, is dropped into the slot, and the button is pushed; whereupon a jet of steaming hot water issues from the faucet, and runs until nine quarts have been delivered, when it stops. It may be imagined that, in a district thickly settled with poor families, the cost of hot water thus obtained is much less than it would be if a fire were kept in the cooking-stove to heat it, and the housekeepers who would otherwise have to do their washing with cold water must bless the inventor. The apparatus has, however, another use. It is the custom in Paris for hackmen to keep "bouillottes," or cans of hot water, in their carriages in cold weather to warm the feet of their patrons, and it is often troublesome and expensive for them to get the water renewed as it cools. By means of the new kiosks the bouillottes may be replenished with the smallest trouble and expense, to the great benefit of the drivers. The interior of the kiosk is partly occupied by a coil of pipe, within which is a gas burner for heating water rapidly. The coil communicates with the city water supply, so that the water drawn through is always fresh. The gas is not wasted by being kept burning all the time, but is lighted by the pressing of the button, which also opens the faucet, and this automatic closing of the faucet and turning off the gas, after the pailful of water has been delivered, are effected by simple devices.

BEEF EXTRACT.

HOW THE STRENGTH OF THE MEAT IS EXPRESSED.

We may, for convenience, divide the factory into three departments: First, pressing; second, bottling; and third, finishing. To the first of these supplies of the choicest parts of the ox are brought in the morning of every working day straight from the shambles. It is at once cut up into succulent steaks, each of which gets a slight sprinkling of table salt, is then inclosed in a new muslin bag and an outer canvas bag, and with dozens more is placed between the perforated metallic plates of a hydraulic press. When the company commenced work they were content with a press which took charge of about 100 steaks at a time, but they have had to meet a greater consumption than was anticipated, so that lately they have installed an exceedingly powerful press, which would do perfectly for making bales of cotton, and this is tested to give a pressure of 400 tons. When the pile of steaks is put on the receiver, the whole is surrounded with a jacket (iced in the summer), and the pressure applied. We need not follow the process too minutely, it is so simple. The juice as it is collected is mixed with an innocuous preservative, set aside for a month to clear, and then transferred to the bottling department. Here the liquor is filled into bottles by a siphon arrangement, so that the liquid comes into contact with as little as air as possible; and the bottles when filled are transferred to a separate building, where they are corked, capsuled, labeled, and boxed. Our traveler observed that a girl examined each bottle before it was passed on to the capsuler, and any one which showed a speck of suspended matter, or was in the least cloudy, was set aside. It was explained that this is part of the principle of the manufacture; the liquor is the pure juice of beef, and, in order that it may keep, the most rigid attention must be given to exclude foreign matter from it, and, as far as our repre-

sentative could judge, the principle was adhered to throughout. And what becomes of the pressed steaks? Well, they are like cardboard when they come out of the press, and as dry as a stick.—*Chem. and Drug.*

LEGAL HOSPITALITIES.

HOW LADIES ARE ENTERTAINED AT THE LAWYERS' CLUB.

At the Lawyers' Club, in the Equitable Building, in this city, if you are a woman, you will have the freedom of the most magnificent suite of ladies' club-parlors in the world. If you are a man, it will be your misfortune to be denied admission. A fee of one hundred dollars will, with proper credentials, make you a member of the club; but even then it will be impossible for you to enter the ladies' parlor. This sumptuous retreat belongs to the wives and daughters, the sisters and cousins, who come to the club to lunch or dine with the members. The host accompanies the ladies to the little entry, rings a bell, and resigns them to the parlor-maid. The suite in which they await the announcement of dinner consists of a parlor, bath, and toilet-cabinet. The parlor is a square room, after the style of Louis the Fifteenth, with a parquetry floor and a magnificent fireplace of Mexican onyx. The walls are done in ivory wood, the panels of which, like the garlands and ribbons in the decoration, are finished in gold. Sconces of French gilt hold electric burners, and on gloomy days a hardwood fire brightens the hearthstone. In summer the furniture is enamelled willow. Just now the polished floor is carpeted with a rich Persian rug, hangings of citron and pomegranate silk drape the windows and doorways, and the tints in the furniture coverings are also after the Persian. The library hangs on the wall. It consists of two shelves of enamelled oak, finished with gold, each containing seventy volumes. Every book is a beauty in calf—print and paper—and every one bears at the lower edge of the back, "Ladies' Parlor, Lawyers' Club." Among other authors there are the best editions of Dickens, Thackeray, Carlyle, Lytton, Reade, Young, Lamb, Sterne, Eliot, Lecky, Scott, Campbell, Pope, Addison, Ingelow, Irving, Swift, Prescott, Browning, Longfellow, Whittier, Bryant, Lowell, and Tennyson. There is neither cover nor key to the library. The books are selected for the ladies and belong to them while guests of the club. Another curious luxury is the pretty little enamelled writing-table, stocked with the finest note-paper, the nicest pens, and the most flowing ink imaginable. On the writing-tray there is a silver cruet filled with sand. When luncheon is announced the visitor is conducted to the dining parlors of the club, where she is served in the finest style. No check is presented, no tips are allowed, and the word money is not even mentioned: it is charged to the loving brother or husband. The service is the very perfection of culinary art. Every dish is a feast and each course is a little banquet.

IMPURE BLOOD.

It has probably occurred to the mind of most readers how small is the number of good complexions among men and women. While many of us are in the habit of speaking of beauty as being but skin deep, yet, as a matter of fact, the opposite is the case. In general, a handsome, healthful complexion means pure blood and healthful tissues, while on the other hand impure blood and ill-health express themselves two out of three times in an unsightly skin, expressionless eyes, and the tell-tale marks of physical disorder. Impure blood is the great evil of life. While it is not a disease, but a condition, it is yet the fountain of most of the diseases which afflict humanity. It is a perfect Proteus so many are the forms that it assumes. It expresses itself in some specific ailment, but seldom does it alike in any two cases. If a person have one or more weak spot or points, disease will appear there. It is like a chain or rope which always breaks at the weakest place. Thus children whose blood is impure and whose parents were gouty are peculiarly liable to kidney disorders. Those who inherit bad blood from scrofulous parents suffer inevitably from boils, abscesses and similar ills. The children of consumptives usually have weak digestions and poor appetites, and are subject to disorders of the assimilative system. Impure blood is transmissible from father to son to an indefinite extent. The late Dr. Dugdale in his famous study, "The Jukes," showed that in one family whose history he had carefully traced, it had gone unchanged through at least seven generations. While it is not contagious in itself, yet it is a potent factor in many contagious diseases, and in such complaints as typhus, typhoid-fever and the typhoid form of many disorders, it is the chief element of danger and death. The researches of Tyndall and Huxley tend to show that in many of the germ-diseases so-called, the germs will find no lodgment in the human body unless the blood is in a depraved state, and that the worst cases of both germ-diseases and others are always found in conjunction with impure blood. Every surgeon knows how difficult it is for patients to recover from the effects of an operation when their blood is full of contaminations. When the latter occurs, the removal of a finger, the sewing up of a slight flesh-wound or even a mere scratch will often terminate fatally. This is the prime factor in the terrible infant mortality in our great cities, in the danger surrounding child-birth, in the peril attendant upon bites from human beings, and in the spreading of such ills as ophthalmia. A chapter might be written upon the effects of impure blood upon human conduct. Every physiologist will bear testimony that it increases the vicious tendencies, that it brutalizes manhood, and that it conduces to crime. Such being the evil, what is the remedy? How shall the blood be purged of its contaminations, and the tissues freed from the humors which have accumulated in their cells? Nature, ever wise, has pointed out a sure, swift and simple system. Keep the pores open by exercise, luke-

Buffalo Lithia Water, Spring No. 2, in Bright's Disease, Gout, Stone in the Bladder, and Diseases Generally of Uric Acid Diathesis, Etc., Etc.

DR. WM. A. HAMMOND, of Washington, D. C., Surgeon General U. S. Army (retired), Professor of Diseases of the Mind and Nervous System in the University of New York, etc.

"I have for some time made use of the BUFFALO LITHIA WATER in cases of AFFECTIONS of the NERVOUS SYSTEM, complicated with BRIGHT'S DISEASE OF THE KIDNEYS or with a GOUTY DIATHESIS. *The results have been eminently satisfactory.* Lithia has for many years *been a favorite with me in like cases, but the* BUFFALO WATER CERTAINLY ACTS BETTER THAN ANY EXTEMPORANEOUS SOLUTION of THE LITHIA SALTS, and is, moreover, better borne by the stomach. I also often prescribe it in those cases of CEREBRAL HYPERÆMIA resulting from OVER MENTAL WORK—in which the condition called NERVOUS DYSPEPSIA exists—*and generally with* MARKED BENEFIT."

DR. WM. B. TOWLES, Professor of Anatomy and Materia Medica, in the Medical Department of the University of Virginia.

"BUFFALO LITHIA SPRINGS, No. 2, belongs to the ALKALINE or, *perhaps, to the* ALKALINE SALINE Class, *for it has proved far more efficacious in many diseased conditions than any of the simple* ALKALINE waters.

"*I feel no hesitancy whatever in saying that in* GOUT, RHEUMATIC GOUT, RHEUMATISM, STONE *in the* BLADDER, and in all diseases of URIC ACID DIATHESIS, *I know of no remedy at all comparable to it.*

"*Its effects are marked in causing a disappearance of* ALBUMEN *from the urine. In a* single case of BRIGHT'S DISEASE *of the* KIDNEYS, I witnessed *decided beneficial results from its use, and from its action in this case I should have great confidence in it as a remedy in certain stages of this disease.* In DYSPEPSIA, especially that form of it in which there *is an excessive production of* ACID *during the process of nutrition*, in some of the PECULIAR AFFECTIONS *of* WOMEN, notably in SUPPRESSION of the MENSES, and in CHRONIC MALARIAL POISONING, etc., I have found it highly efficacious."

DR. G. HALSTEAD BOYLAND, late Professor of Surgery, Baltimore Medical College, late Surgeon French Army (Decorated), Member Baltimore Academy of Medicine, Member of American Medical Association.

"In BRIGHT'S DISEASE of the KIDNEYS, ACUTE or CHRONIC, BUFFALO LITHIA WATER, Spring No. 2, is, in my experience, *without a rival*, whether in the PARENCHYMATOUS form or INTERSTITIAL NEPHRITIS. In cases in which the ALBUMEN in the URINE reached as high as 50 per cent., I have known it under a course of this water gradually diminish and finally disappear, at the same time other alarming symptoms were relieved and the sufferers restored to health.

"In STONE in the BLADDER of the RED LITHIC ACID and the WHITE PHOSPHATIC DEPOSIT, the SOLVENT power of this water is *unmistakable.*"

Water in cases of one dozen half gallon bottles, $5.00 f. o. b. here.

THOS. F. COODE, Proprietor, BUFFALO LITHIA SPRINGS, VA.

warm ablutions and rubbings; keep the bowels open by fruits and vegetables rather than by medicines; increase vitality by being in the sunlight and fresh air as much as possible, and last and most memorable of all, use the blood-purifiers she has provided. These are sarsaparilla, podophyllin, yellow dock, stillingia and the iodides. They are good alone. They are best when compounded in scientific form, as in Ayer's Sarsaparilla. In this preparation they appear in their most efficient condition. Introduced into the system, they expel every impurity and restore every function to its highest power. Blotches and disfigurements disappear, the mouth becomes clean, the eyes bright, the complexion hale and beautiful. Impure blood, the king of all evils, loses its terrors for those who are acquainted with the value of Ayer's Sarsaparilla.

FURNITURE WASH.—Add two tablespoonfuls of kerosene to the pail of water with which you wash grained or other varnished furniture.

ANCIENT DENTISTS.—A physician in Rome recently brought to light some interesting specimens of ancient dentistry and artificial teeth in skulls from different Etruscan tombs, dating as far back as the sixth century before Christ.

SLEEP PROTECTOR.—To prevent the snapping and cracking of radiators when the steam is turned on, the valves being open, it is only necessary to cause the steam to enter slowly, giving the water a chance to escape and the radiator time to warm up.

PAPER BARRELS.—After three years of experimenting, paper barrels are now being made by an English firm which compete successfully with those made of wood. Waste-paper, cardboard, and old sacks are the raw materials for their manufacture.

HEAT FROM THE SUN.—The most recent observations as to the amount of heat the earth receives from the sun show that in clear, pleasant weather 63½ per cent. of heat is absorbed by the atmosphere, and only 36½ per cent. reaches the soil. This figure rises in October to 41 per cent., and sinks to 28 per cent. in January.

CLEVELAND'S SUPERIOR Baking Powder.

The Official Reports of the
United States Government, 1889,
Canadian Government, 1889,
New Jersey Commission, 1889,
Ohio Food Commission, 1887,
prove that Cleveland's is

THE STRONGEST

of all the pure* cream of tartar baking powders.

*Ammonia or alum powders, whatever their strength, should be avoided as injurious.

Piso's Remedy for Catarrh is the Best, Easiest to Use, and Cheapest.
CATARRH
Sold by druggists or sent by mail. 50c. E. T. Hazeltine, Warren, Pa.

1888 1889 1877 1883 1884 1880 1881 1890 1886 1885 1879 1882 1887 1878

See it grow! You won't have to look back far. 1877 was the year when *Pearline* started in to take charge of washing and cleaning. It was a new idea; people didn't know about it; when they did find out, they were afraid of it.

But look at it now. Every year has been a big advance on the year before — and 1890 a bigger advance than ever. It's the biggest year, against the biggest opposition—smooth-tongued peddlers to fight against, cheap prices and poor quality, prize packages, imitations of all sorts. But *Pearline* started ahead and has kept there—and now it's farther ahead than ever.

A poor thing can't grow like this. A dangerous thing can't. Find out for yourself why *Pearline* grows. Ask about it of some one who is using it.

Beware of peddlers and imitations. 303 JAMES PYLE, New York.

AN OPEN CHANCE.—A prize worth winning has been offered by the East Indian government. The prize is $25,000 for a practical machine for decorticating ramie. Here is a chance for some of our wide-awake American inventors to show their ability, and at the same time win a little pocket-money.

EXCELLENT PLAN.—*The Medical Bulletin* says that in some hospitals in Europe it is customary to allow visitors to converse on certain days, by means of telephone in a waiting-room, with patients in the wards; and this arrangement has been found to work admirably, as it not infrequently happens that the nervous state of the patient or the possibility of infection by the visitor renders closer communication inadvisable.

CHARCOAL BISCUITS.—Charcoal wafer biscuits, as articles of food, are not, from the nature of the active ingredient which they contain, very attractive in appearance, but they possess a flavor by no means unpleasant. Indeed, it would be difficult to say from the taste alone that they contained charcoal at all. There is, too, no objectionable feeling of grittiness experienced during mastication. They are adapted for use in cases of excessive acidity of the stomach.—*London Lancet.*

EGYPTIAN PROGRESS.—According to *El Siglo Medico*, the Egyptian government will soon institute a system of compulsory vaccination. The law says that all children must be vaccinated before they have reached the age of three months, this being done at the expense of the state in the case of the poorer classes. Violations of the law are punishable by a fine and imprisonment.

COPPER CORROSION.—Prof. Dewar has accidentally discovered that copper, heated to the temperature of boiling water, exerts a destructive effect upon india-rubber if the two come in contact. By experiments he determined that the copper oxidized the rubber. This is important information for many.

MICRO-ORGANISMS.—As long as the cause of a disease is undetected, medicine is groping in the dark, and it is only since the genesis of many disorders has been traced to micro-organisms that an ultimate attainment of the right treatment for them has become probable.

CLASS LEGISLATION.—The Legislature of Vermont has passed an act prohibiting the manufacture of "any article in imitation or semblance of natural butter or cheese," unless it is colored pink. The same restriction applies to imitations used at hotels or other public eating-houses.

Fine Table Wines

From our Celebrated Orleans Vineyard.

Arpad Haraszthy & Co.

Producers of the
ECLIPSE
CHAMPAGNE,
530 Washington St.
SAN FRANCISCO.

GENERAL AGENCIES:
NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOSEPH R. PEEBLES' SONS CO., 73 West Fourth Street.
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.

PUBLICATIONS OF THE
ANALYST PUBLISHING CO.

THE AMERICAN ANALYST.
Weekly. Every Thursday. $1 per year.

THE ROOFER, TINNER AND SHEET-IRON WORKER.
Monthly. 15th each month, $1 per year.

THE LEATHER MANUFACTURER.
Monthly. 1st each month. $3 per year.

Reliable agents and representatives wanted everywhere on liberal terms. Address

ANALYST PUBLISHING CO.,
19 PARK PLACE, NEW YORK.

THE N. Y. HAY EXCHANGE BULLETIN.

OFFICIAL REPORT OF THE HAY AND STRAW MARKET AT NEW YORK.

COMMISSION SALESMEN.

NOTICE.

These names are arranged alphabetically.

WM. AFFLECK & CO.,
Commission Merchants in
HAY AND STRAW,
Office No. 5,
N. Y. Hay Exchange Building.

J. ALSDORF,
Commission Dealer in
HAY AND STRAW,
33d Street and 11th Ave.,
NEW YORK.

E. A. DECKER. F. W. TOMPKINS.
DECKER & TOMPKINS,
Commission Merchants in
HAY, STRAW, GRAIN,
Office. 16 New York Hay Exchange Building.

L. S. DILLENBACK. T. O. PECK.
DILLENBACK & PECK,
MAIN OFFICE:
Room O, N. Y. HAY EXCHANGE, N. Y. City.
STOREHOUSE AND BRANCH OFFICE:
101, 103 and 105 North 5th St.,
and 152 and 154 Berry St.,
Palmer's Dock. Brooklyn, E. D.

EDWIN B. DUSENBERRY,
COMMISSION MERCHANT,
And Wholesale Dealer in
HAY, STRAW AND GRAIN.
No. 1, N. Y. Hay Exchange, New York.

THOS. FONDA & CO.,
Commission Merchants
And Dealers in Hay, Straw, Grain and Country Produce,
13 & 14 N. Y. Hay Exchange Building.

N. A. FULLER,
COMMISSION MERCHANT IN
HAY AND STRAW,
33d Street and 11th Ave.,
NEW YORK.

THEO. P. HUFFMAN & CO.,
COMMISSION MERCHANTS
In Hay, Straw, Grain, Feed, &c.,
648 & 650 West 34th Street,
Bet. 11th & 12th Aves., N. Y.

H. B. Jenkins. F. S. Williams.
JENKINS & WILLIAMS.
COMMISSION MERCHANTS IN
HAY, STRAW AND GRAIN,
HAY EXCHANGE.

The N. Y. Hay Exchange is located at 601 W. 33d St., corner 11th Avenue.

Only the cards of members of the N. Y. Hay Exchange appear on this page.

RULES FOR GRADING HAY AND STRAW

As Adopted by the N. Y. Hay Exchange.

CHOICE OR PRIME HAY—Shall be pure timothy, properly cured, bright, natural color, sound and well baled. No. 1—Shall be timothy, not more than one-eighth (⅛) mixed with "red top" properly cured, bright natural color, sound and well baled. No. 2—Shall be timothy, not more than one-quarter (¼) mixed with red top and blue grass, properly cured, good color, sound and well baled. No. 3—Shall include all timothy not good enough for No. 2, proportionately mixed with blue grass, red top, and clover, sound and well baled. SHIPPING—Shall include all hay not good enough for other grades, and may be natural meadow, free from wild or bog grass, and must not contain over one-third (⅓) clover, sound and well baled. CLOVER MIXED—Shall include all hay containing not over two-third (⅔) clover, and one-third (⅓) timothy, properly cured, sound, and well baled. CLOVER—Shall be medium grown, properly cured, good color, sound, and well baled. NO GRADE OR REJECTED HAY—Shall include all hay badly cured, musty, stained, or in any way unsound.

No. 1. RYE STRAW—Shall be clean, bright, long Rye, in bundles, sound, well and securely baled. No. 2—Shall be long Rye, in bundles, sound, well and securely baled. SHORT RYE—Shall be clean, not bundled, sound, well and securely baled. OAT STRAW—Shall be clean, bright, sound, well and securely baled.

In the New York market bale-wood is weighed in without tare. In all other markets it is deducted.

These quotations for choice, No. 1 and No. 2 hay are for large bales. 5c. per cwt. less when in perpetual press bales.

The New York quotations are per cwt. At other points, per ton.

NEW YORK, Jan. 19, 1891.

The following are the market prices to-day at New York.

	New York.
Fancy Hay	65c. @
No. 1	60 @
No. 2	55 @
No. 3	50 @
Shipping	45 @
Clover mixed	45 @ 50
Clover	40 @
Prime Rye Straw	90 @ 95
No. 2 "	80 @ 85
Oat and Wheat	45 @ 50

Receipts week ending Jan. 17, as follows:

Via N. Y. Central	207 cars.
" West Shore	130 "
Other roads by Lighter, 34th Street	117 "
Total	454 cars.
Total last week	304 "
Increase	150 "

The condition of the market this week differs but little from that of last, except that prices are firmer, as above quoted, notwithstanding the arrivals from all sources are heavier, and there is no accumulation of hay except in perpetual pressed bales, which is selling slowly and at prices somewhat below that of large bales of similar grades.

We are again informed of a circular being sent out from a New York commission house quoting prime hay 75c., and, in justice to shippers, we deem it only fair to refer to it again as on a former occasion. By the closest inquiry we have failed to discover an instance where a sale has been made at that figure, or that any one in the commission trade would be justified in asking such a price, knowing the impossibility of obtaining it. These fictitious quotations are misleading, and would prove unprofitable to the shipper were they acted upon by him in purchasing hay with such prices in view. Strictly fancy hay would bring 70c. should any of that kind arrive just now.

In answer to inquiries made relative to the continuance of the present market for a week or two hence, we would say that it is unwise to predict anything for the future, as it depends largely on the receipts as well as the demand. At the same time, we consider the market fairly encouraging.

Rye straw scarce, and in good demand at 90c., and a few sales have been made at 95c.

OSCAR KENT,
Commission Merchant,
HAY AND STRAW,
Room 20, New York Hay Exchange Building.
Personal attention guaranteed all consignments

JOHN KERWIN & SON,
DIRECT RECEIVERS OF
HAY, GRAIN and GENERAL PRODUCE
DEPOT AND STOREHOUSES,
Palmer's Dock, Nos. 97 & 99 North Fifth Street,
BROOKLYN, N. Y.
SHIPPING ADDRESS, PALMER'S DOCK, BROOKLYN, N.Y
West Shore R. R., N. Y. C. & H. R. R. R., N. Y. L. E. & W. R. R., Pennsylvania R. R., D. L. & W. R. R., Lehigh Valley R. R., and connections.

W. J. OVEROCKER. PERRY HATCH
OVEROCKER & HATCH,
Commission Merchants in
HAY, STRAW AND GRAIN,
33d Street & 11th Avenue, New York.
References: West Side Bank, New York City; Exchange Bank, Holly, N. Y.

Gilbert Plowman, NEW YORK. Spencer Billington, PORT HUNTER, N. Y.
PLOWMAN & BILLINGTON
COMMISSION MERCHANTS,
HAY, STRAW, GRAIN, &c.
No. 15 N. Y. Hay Exchange,
33d St. & 11th Ave., NEW YORK.

JAMES ROZELL & SON,
Commission Merchants and Wholesale Dealers in
HAY, STRAW, GRAIN
AND
COUNTRY PRODUCE.
N. Y. Hay Exchange, New York.

SKINNER, BLOOM & CO.,
Successors to Rogers, Skinner & Co.,
COMMISSION MERCHANTS
And Dealers in
Grain, Flour, Hay, Feed, Meal, &c.,
74 CORTLANDT STREET, - NEW YORK.
Barge GYPSIE, Foot Bridge St., Brooklyn.

H. SLINGERLAND,
Barges MERCHANT and HARVEST QUEEN
Foot of West 11th Street,
HAY AND STRAW.
Also, 33d and 35th Streets, and all Railroad terminals. Special facilities for lighterage free goods

CHARLES F. SWAN,
Commission Merchant in
HAY, STRAW & GRAIN,
At all the Railroad Terminals in New York, Brooklyn, Jersey City, &c.
MAIN OFFICE,
108 BROAD ST., NEW YORK.

TITUS, WELLS & WILLETS,
Commission Merchants and Dealers in
HAY AND STRAW,
133 Roosevelt St.,
NEW YORK.

VAN ALSTYNE & CO.,
COMMISSION MERCHANTS.
SPECIALTIES:
HAY, STRAW & FLOUR,
Nos. 2 and 4 Stone St., New York.
Liberal advances made on consignments.

G. E. Van Vorst. James M. Hillery.
VAN VORST & CO.,
COMMISSION MERCHANTS,
HAY, STRAW AND GRAIN
N. Y. Hay Exchange, 33d St., & 11th Ave.
562 & 564 West 34th St., NEW YORK.

NOTICE.

These names are arranged alphabetically.

HOSMER, CRAMPTON & HAMMOND,

NO. 43 COMMERCIAL STREET,

BOSTON.

COMMISSION MERCHANTS,

HAY, STRAW, FLOUR & GRAIN.

E. B. HOSMER, G. W. CRAMPTON, BENJAMIN HAMMOND, A. L. ROBINSON.

BOSTON HAY AND STRAW MARKET.

Hay, choice to fancy in large bales	$14.50 to $15.00
Hay, choice to fancy, perpetual pressed bales	13.00 to 14.00
Hay, fair to good	12.00 to 13.00
Hay, poor to ordinary	10.00 to 12.00
Hay, Clover and Clover mixed	10.00 to 11.00
Hay, swale	9.00 to 9.50
Straw, Rye, good to prime	17.50 to 18.00
Straw, Oat	9.00 to 10.00

BOSTON, Jan. 17th, 1891.

Receipts for the week are 441 cars of hay and 33 cars of straw; corresponding week last year, 187 cars of hay and 15 cars of straw. The receipts of hay continue heavy and in excess of demand. The market is dull and weak, and decidedly in buyers' favor; quotations are nominal and represent asking prices; they are, however, frequently shaded in order to effect sales. Rye straw is quiet, with moderate demand.

H. F. WILSON,
WIRE BALE TIES,
458 WEST 38th STREET, New York.



40 COUPON OFFERS
and our large Illustrated Catalogue of SCROLL SAWS, Tools, Designs, and 30 Cts. WORTH of *full size* SCROLL SAW DESIGNS, sent FREE for 10 Cts. in stamps to pay postage.
JOHN WILKINSON CO., 269 State St., Chicago.

CHALLEN'S LABOR SAVING RECORDS are used and *re-ordered by* 3000 Advertisers and 3000 Newspapers. Try them for every line of business and profession.
CHALLEN, Publisher,
10 Spruce St., New York.

HAMMOND'S
CELEBRATED
Calumet Oleomargarine

Strictly pure, cheap and healthful.
Ask your grocer for it.
Put up in packages of all sizes, also prints and rolls.
G. H. HAMMOND CO.,
607 to 615 THE ROOKERY,
CHICAGO.
Also offices at Boston, South Omaha, Neb., and Hammond, Ind.

SWIFT'S
CHOICE
Chicago Dressed Beef
AND
MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,
UNION STOCK YARDS,
CHICAGO, ILLS.

ANNOUNCEMENT.

E. B. TREAT, Publisher, N. Y.,

has in press for early publication the Ninth Yearly issue of the

"INTERNATIONAL MEDICAL ANNUAL."

Its corps of thirty-seven Editors—specialists in their respective departments, comprising the brightest and best American, English and French authors—will vie with previous issues in making it even more popular and of more practical value to the Medical Profession.

We have the assurance of some of the best medical practitioners that the service rendered their profession by this Annual cannot be duplicated by any current annual or magazine, and that it is an absolute necessity to every physician who would keep abreast with the continuous progress of practical medical knowledge.

Its Index of New Remedies and Dictionary of New Treatment, epitomized in one ready reference volume at the low price of **$2.75**, make it a desirable investment for the busy practitioner, student and chemist.

IN PRESS. DIABETES, Lectures on, by ROBERT SAUNDBY, M. D., Edinburgh. 300 8vo pages, $2.75.

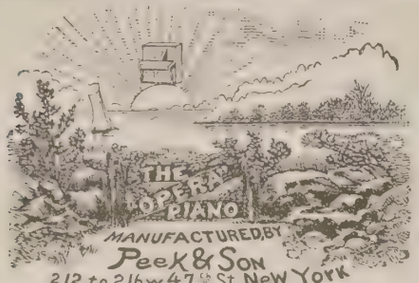
NATURAL MINERAL PURGATIVE WATER.
From the Springs of
VILLACABRAS.
Prescribed by the Highest Medical Authorities.

Stronger effects than any other under smaller volume. No smell—no repulsive taste—no after-constipation—no gripes. As a daily laxative it can be taken either pure or mixed with milk, tea or broth.

Sold by all Good Druggists.

HARTSHORN'S SELF-ACTING SHADE ROLLERS

NOTICE SCRIPT NAME OF Stewart Hartshorn ON LABEL, AND GET THE GENUINE HARTSHORN



A HIGH-GRADE PIANO

AT A VERY MODERATE PRICE.

NEW DESIGNS. FANCY WOODS.

Terms Easy. + Monthly Instalments.

TWO, THREE AND FOUR PEDALS.

Catalogues, Prices, Terms, Etc., sent to any address.

EVERY PIANO WARRANTED 5 YEARS.

(Mention this Paper.)

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,

HOWARD STREET, BOSTON, MASS.

GOLD MEDAL, PARIS, 1878.



W. BAKER & CO.'S Breakfast Cocoa

from which the excess of oil has been removed,

Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

"BILLET"

are

Carefully Selected French Sardines,

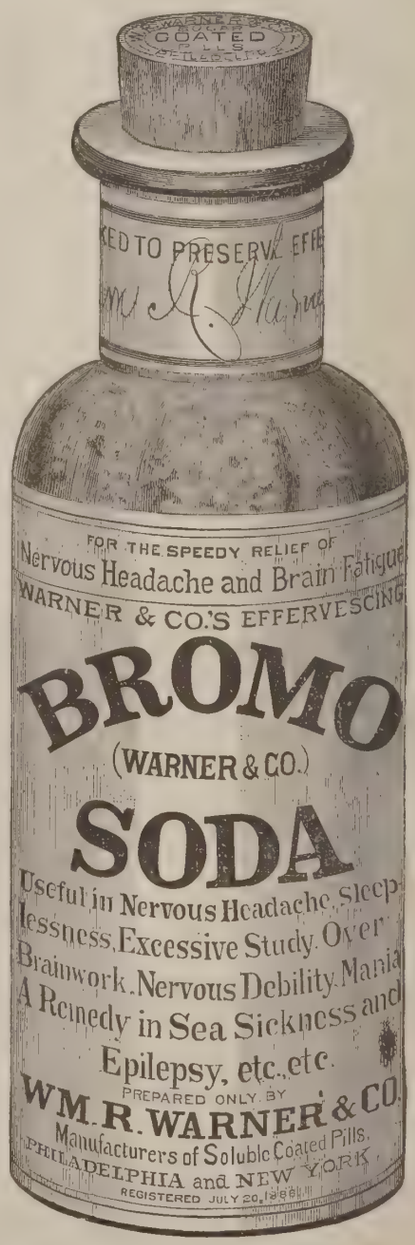
Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS

BROMO SODA.

Useful in Nervous Headache, Sleeplessness, Excessive Study, Over Brainwork, Nervous Debility, Mania, Etc.

DOSE—A heaping teaspoonful in half a glass of water, to be repeated once after an interval of thirty minutes, if necessary. Each teaspoonful contains 30 grs. BROMIDE SODIUM and 1 gr. CAFFEIN,



SUPPLIED BY ALL DRUGGISTS

Ask for (Bromo-Soda, Warner & Co.) and take no other "Bromo."

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.

MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.

STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

LEA & PERRINS' SAUCE



In consequence of Imitations of LEA & PERRINS' SAUCE, which are calculated to deceive the public, LEA & PERRINS beg to draw attention to the fact that each bottle of the Original and Genuine

WORCESTERSHIRE SAUCE

bears their Signature thus—

Lea & Perrins

For Sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS, NEW YORK.

ESTABLISHED IN LONDON, 1831.

DEAN'S PATENT

Ardenter Mustard



I TELL YOU DEAN'S ARDENTER IS THE VERY BEST.

YOU CAN GUARANTEE THAT THE ARDENTER MUSTARD

WILL GIVE PERFECT SATISFACTION.

ARDENTER TRADE MARK MUSTARD

This Mustard is superior to any manufactured



both for table and sick room

W. G. DEAN & SON,
361 & 363 WASHINGTON STREET; 84, 86, & 88 NORTH MOORE STREET, N.Y.

RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,
184 Greenwich St., N. Y.

BLAIR'S PILLS.



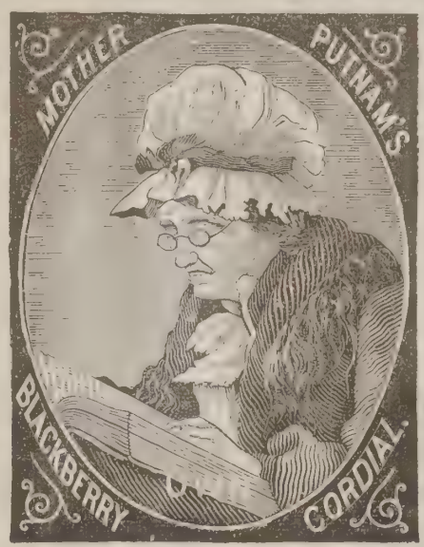
Great English Remedy for GOUT, RHEUMATISM and KIDNEY COMPLAINTS.

SURE, PROMPT and EFFECTIVE.

Large Box, 34; Small, 14 Pills.

At all Druggists, and

224 WILLIAM STREET, NEW YORK.



C-U-R-E-S

DIARRHŒA, DYSENTERY,

MALARIA,

all ailments of the bowels. Is an anti-dyspeptic, and a **DELICIOUS INVIGORATIVE.** Leading Physicians prescribe it for **ADULTS AND CHILDREN.** *FOR SALE* by Druggists and dealers.

RHEINSTROM BROS., DISTILLERS OF FINE LIQUEURS,
54, 56, 58, 60, 62 E. 3rd STREET, CINCINNATI, O.

RIDGE'S FOOD

The Most Reliable Food
For Infants & Invalids.
Not a medicine, but a specially prepared *Food*, adapted to the weakest stomach. 4 sizes cans. Pamphlet free. *Woolrich & Co.* (on every label). *Palmer, Mass.*

We shall be glad to supply our readers with any periodical published at club rates.

Send us a postal naming periodical and we will quote you prices.

ANALYST PUBLISHING CO.,
19 Park Place,
New York.

Pure LAGER BEER,

"IMPERIAL" and "CULMBACHER"

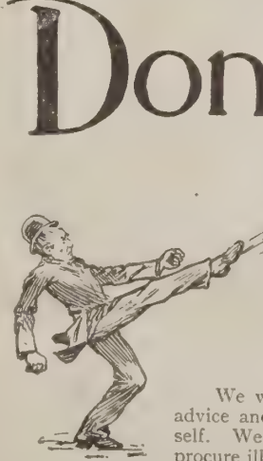
Brewed & Bottled SPECIALLY FOR HOTELS, CLUBS AND PRIVATE FAMILIES

BY

Beadleston & Woerz
291 W. 10th St. New York.

Orders by Postal Card promptly attended to.

Don't kick



because your business is bad, but advertise If you don't know how to, write to us and we will tell you.

We will prepare your advertisement or give you advice and assistance to aid you in preparing it yourself. We will have the advertisement set in type and procure illustrations if any are needed. When a satisfactory advertisement has been produced we will furnish proofs and an electrotyped pattern to be used in duplicating the advertisement if the display or illustration make an electrotype desirable.

Address GEO. P. ROWELL & CO.,
Newspaper Advertising Bureau,
10 Spruce St., N. Y.

DR. PRICE'S CREAM Baking Powder.

Most Perfect Made

A Pure Cream of Tartar Powder—
Superior to every other known.
Used in Millions of Homes—40 Years the Standard.
Delicious Cake and Pastry, Light Flaky Biscuit, Griddle Cakes
Palatable and Wholesome.
No other baking powder does such work.

THE GREAT AMERICAN TEA COMPANY

LADIES GET UP ORDERS. Entire New Departure. A HANDSOME PRESENT TO EVERY SUBSCRIBER.

THE GREATEST INDUCEMENTS EVER KNOWN TO INTRODUCE OUR NEW GOODS.

If you enjoy a cup of **Delicious Tea** send in your orders. 3½ lbs. Fine Tea by mail on receipt of $2 and this "ad". Beautiful premiums given away with $5 orders and upwards. The **most extraordinary bargains** ever offered, during the next thirty days. China Tea Sets and Lamps with $10, $15 and $20 orders to introduce our excellent **New Crop Teas.** Formosa and Amoy, Oolong, Congou. English Breakfast, Japan, Imperial, Young Hyson, Gunpowder, Sun Sun Chop and Mixed. Good mixed teas 20c. per lb. Headquarters in United States for Fine Teas. One pound of our tea will go farther than three pounds of trash. Thirty years' national reputation for selling **Pure Goods Only.**

THE GREAT AMERICAN TEA COMPANY,
P. O. BOX 289. 31 and 33 Vesey Street, New York.

Tabasco Pepper Sauce
OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced, by connoisseurs, to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY,
NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

All New Subscriptions sent now will be good until January, 1892.

GLENN'S SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

Beware of Counterfeits.

Wholesale Depot,
C. N. CRITTENTON,
115 FULTON STREET,
NEW YORK.

Be progressive and keep abreast of the times. Avoid dyspepsia by using **Lard Compound** and **Cottolene,** a substitute for lard.

The highest medical authorities pronounce them healthful; and expert cooks commend them.

Our **Clairette** brand of cotton oil soap is the purest and best laundry soap in the market; as pleasant to the hands as genuine castile.

N. K. FAIRBANK & CO.,
CHICAGO AND ST. LOUIS.



AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 5. NEW YORK, THURSDAY, JANUARY 29, 1891. WHOLE No. 205

American Analyst,

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - $1 per year.
Single Copies, - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.

Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.

Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,

H. LASSING, M. D., *Editors.*
T. P. McELRATH,

No. 19 Park Place, . . . New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

Art and Critics 52
A Spook Census 50
Beef Tea 53
Domestic Dietetics 53
Editorials 49
Another Dressed Beef Triumph; Pure Food Prospects; Women's Wages; Improvement in California Wines.
Fulminates 52
Hay Market Official Bulletin 56
How We Catch Cold 52
Hypnotism 51
Ice in the Tropics 51
Mental Habit 50
Observation 54
Pie for Lunch 53

ANOTHER DRESSED BEEF TRIUMPH.

The dressed beef men have had another triumph over the obstructionists. This time the location is Virginia. On January 19th the United States Supreme Court handed down an opinion affirming the judgment of the Circuit of the United States for the Eastern District of Virginia, directing that a writ of habeas corpus be granted to William Rebman, convicted in Norfolk of violation of the State Meat-Inspection Law. This is one of what are known as the dressed-beef cases, arising out of State legislation to restrict the sale of meats by firms located outside the State in which the meats are offered for sale. The statutes of Virginia make it an offence to offer for sale fresh meats slaughtered more than 100 miles from the place of sale unless first inspected, provision for which is made on the petition of not less than twenty persons, the compensation to the inspector to be one cent a pound. It was contended that this law was an interference with inter-State commerce, and therefore unconstitutional and void. The court, in an opinion by Justice Harlan, sustains this contention and affirms the judgment of the lower court ordering Rebman's release.

PURE FOOD PROSPECTS.

The Pure Food Bill appears likely to fall through in the present Congress—as it had done in so many previous sessions of that progressive body of legislators. The fact is, as we learn from the well-informed Washington correspondent of the *Commercial Bulletin* there is a manifest conflict betweeen that most desirable measure and the Conger Lard bill. Senator Paddock, of Nebraska, has several times given notice that he would at the earliest moment call up in the Senate the Pure Food Bill, which covers the whole ground of food adulteration, while Senator Allison has announced that he will urge the consideration of the Conger Lard bill. The Conger bill deals with lard and its substitutes, and by imposing a tax upon the substitutes, placing the manufacture under the supervision of the Internal Revenue Bureau of the Treasury Department. This bill has already passed the House, and if either measure is to be enacted, it will be much easier to get this one through the Senate and to the President than a bill which has not yet been considered in either House. The rapid approach of the end of the session makes it almost impossible that so sweeping a measure as the Pure Food bill can pass both Houses and become a law. Senator Paddock is much interested in the Pure Food bill, and has given much study to its form. He believes that he has overcome the Constitutional objections to legislation which deals with the food and drink of the people by making the bill apply only to articles which are the subject of Inter-State commerce. The theory is that the manufacture of adulterated articles for consumption within a State will soon cease when they cannot be sent outside the State and that the public will refuse to buy articles which are not good enough to be subjects of Inter-State commerce. A number of prominent Democrates are not satisfied that the bill escapes Constitutional objections even in its present form, and it is likely to be discussed at length before it can pass either House. Mr. Hatch, of Missouri, who was Chairman of the House Committee on Agriculture in the last Congress, is a Democratic member who is disposed to go as far as any one in Federal legislation for the benefit of the farmer, but he says that he would speak and vote against a Pure Food bill which sought its object by such means as Senator Paddock's bill. The subject was pretty thoroughly canvassed by the Democratic members of his Committee in the last Congress, and they could not see their way clear under the Constitution to report a bill. If Senator Paddock succeeds in getting up the Pure Food bill, he will doubtless move that it be substituted for the Conger bill, which is before the Senate. This will help him in a parliamentary sense to pass his bill. The substitute would go to the House for concurrence, or non-concurrence and in the natural order of things would go to a Conference Committee. A substitute of so different a nature, however, from the original bill would hardly be allowed to go into conference without pretty full consideration on the floor. Such consideration would take time, even if it did not result in an adverse majority. The members who placed the Conger Lard bill before everything else in importance would be disposed to reject the Senate substitute with the hope of compelling the Senate to accept the Lard bill. If it became necessary in the closing hours of the session, dilatory tactics would very likely be adopted to prevent the hasty enactment of such a sweeping measure as the Pure Food bill.

WOMEN'S WAGES.

One of the most laudable minor journalistic enterprises of the day, that has come to our notice is *The Nightingale*, a small eight page weekly published in this city, as the advocate and organ of female nurses. In a recent issue is a brief discussion of the difficulty unprotected women encounter in securing for themselves "the price of bread." The universal discrimination against the sex, which refuses to women the wages willingly given to men for similar services, is one of the principal causes of the difficulty referred to, though there are other obstacles to be overcome which must be in some way offset before we can hope to see that palpable injustice rectified. Elsewhere in the same paper we find an argument on the question of the relative wages of men and women. The editor says in reply to the argument that if the wages of women increase the wages of men must diminish, there being only so much money in the country for the payment of the labor offered:

"Certainly the wages of men might diminish. Why not? Why should'nt the woman receive her part of the work of the country and her part of the pay of the country directly, rather than to have it filter down to her through the hands of particular men? Does the earth belong to men only or does it belong to women also? If women have the right to be, they have a right to their part of the industries of the country regardless of consequences. You say but it is better that women should be supported by men. We deny it. It is better that every woman should support her individual self by her own labor. We do not here except married women, even. There is a feeling in the air which points to the financial independence of married women. It is a curious fact that the women most interested in the questions of women's rights are married women; and women happily married, too. It is a curious fact that unmarried women have with few exceptions very little influence in their ranks, it being felt that the unmarried woman is an anomaly, and scarcely knows what is best for the class. It is a curious fact that the unhappily married woman—the divorced woman, the woman separated from her husband—is not brought forward at all in their councils, any scandal of that sort being sufficient to degrade the individual from leadership. No, the national suffrage organization asks for certain rights for the normally situated woman, for the married woman, the child-

bearing woman, in her home. Study this subject a little more closely and you will be amazed at the lengths to which it will carry you. But you may say, even acknowledging that woman should have equal pay for equal work, it is seldom that the woman really does good work or valuable work, she is not really worth so much as the man. We are sorry to say that this is true, and, just here is a chance for immediate reform. It is a reform, however, which must commence in the cradle. In the first place our girls have the right to sound bodies, bodies as strong as their brothers' bodies are, to say the least. You do not tolerate any restrictions which physically cripple your boy. Do not cripple your girl at a time when she can have no voice in her development. In the second place, you can see to it that your girl is furnished with a money-making occupation."

IMPROVEMENT IN CALIFORNIA WINES.

Within the last eight or ten years there has been a revolution in the character of California wines. Any one familiar with the output of the California vineyards of ten years ago would not recognize the wine now put on the market. Instead of a coarse, rough, fruity wine, we have now as smooth, pleasant a beverage as one would wish to drink. Most people ascribe this to the improvement that has taken place in the character of the grapes, but as a matter of fact this has very little to do with it. The grapes of ten years ago were nearly as good as they are now, but few people knew how to treat them. When wine-making first became an important industry, the owners of vineyards went to Eupore for experts to superintend the manufacture of their wine. The result was disastrous failure. Each manager tried to treat wine as he had been accustomed to at home, to press it in the same manner, and to keep it in the same kind of cellars, without making any allowance whatever for difference of climate and difference of grape. A crude, rough wine was the result. The vineyard owners were greatly discouraged, and the superintendents went back to their native countries convinced that there was no future for the California grape. A few remained and undertook to adapt their European experience to changed conditions. Experiments were made. Where one mode of treatment failed, another was tried, and finally the secret of handling the different kinds of California wine was discovered. To-day, not only is the home consumption large, but millions of gallons of claret are annually sent to France to be reshipped from that country with a French label, and pronounced excellent. The grapes are about the same as they were ten years ago, but improved methods of treating the juice have revolutionized the California wine industry.

A SPOOK CENSUS.

A QUEER AND CURIOUS COLLECTION OF QUAINT AND CASUAL COINCIDENCES.

The Society of Psychical Research is still busily engaged in taking a census of hallucinations, a work started in Paris in 1889 at the International Congress of Experimental Psychology. In England the census is under the care of Professor Henry Sidgwick, of Cambridge University, president of the Psychical Society; in France Leon Marillier is collecting experiences, and in the United States, Professor William James, of Harvard University, has assumed charge of the work. The experiences which it is sought to enumerate are scientifically described as "casual hallucinations of sane persons, including under this term phantasmal appearances, which some deny to be hallucinations, because they believe them to be ghosts." The object of this inquiry is to ascertain the proportion of persons who have had such experiences, and to obtain details of these experiences so that some insight may be gained into their cause and meaning. The general question is framed in this way: "Have you ever, when believing yourself to be completely awake, had a vivid impression of seeing or being touched by a living being or inanimate object, or of hearing a voice; which impression, so far as you could discover, was not due to any external physical cause?" Of course, for a census, the answer "no" is as important as the answer "yes," but one result of the census thus far has been to show that the affirmative answers are rare and infrequent. Professor Sidgwick has recently made public a partial report of his work on this census in England. In that country 6,481 answers have been received to the question given above; of these, 3,617 have been from women; and 727 have been "yes" answers, a percentage of 11 of the total number received. Five hundred and nine women answer "yes," and 218 men furnish the rest of the "yes" answers; of the "no" answers, 2,646 are by men, and 3,108 by women. Of the "yes" experiences in 474 cases the sense of sight was affected; in 219 voices were heard without any accompanying visual impression; and in 56 cases the sense of touch only was affected. In about 48 cases of the whole number more than one sense was affected at the same time, but it is pointed out that it is difficult in the case of sounds, especially of non-vocal sounds, such as rustling, footsteps, etc., to ascertain whether they were hallucinatory or not. There are some cases, bordering on ghost-land, which there is some reason to regard as purely subjective. Thus there are six cases of the figure and one of the voice of dead persons "phantasmally seen or heard when the percipient was unaware of the death." There are nine cases where apparently the same figure is independently seen by more than one person on different occasions. Of considerable importance, as indicating a corroboration of experience, are the sixty-six collective cases—cases in which more than one person shares the experience. More than half of the visual collective cases occurred out of doors, while of the visual cases occurring to a single percipient only about one-seventh occurred out of doors. On this point Professor Sidgwick observes.

"Now, though some supposed apparitions seen out of doors are quite as obviously true hallucinations as some of them seen indoors, still, speaking generally, there seem to be several reasons why real human beings are more likely to be mistaken for apparitions out of doors than indoors. Further, if the figure be unrecognized this can seldom be regarded as evidence of its hallucinatory character out of doors, while it would often afford evidence indoors, since it is not usual for strangers to walk into rooms without any one in the house knowing anything about it. And, again, the mode of appearance and disappearance of the figure is much more often clearly impossible for a real person indoors than it is out of doors. The figure may, for instance, go through a locked door, or through the wall, or into a room into which it is at once followed and where it is not found. Out of doors it is often difficult to prove that the vanished figure has not simply turned into a house or been hidden by some obstacle. After making all allowances, however, there remains a certain number of collective cases in which the objects seen can hardly have been real people or things."

Professor Sidgwick then proceeds to give some remarks on the nature and origin of hallucinations, and points out that the common origin of collective hallucinations may be telepathic (some other mind affecting the common percipients similarly and simultaneously), or it may be due to what he calls "physical suggestion," "by which I mean some real external cause—say a sound like a footstep—starting by suggestion a similar hallucination." "Hallucinations," he adds, "are so rare in the experience of most of us that it may fairly be argued that when we see them we are not quite in a normal state, and I think there is reason to believe that self-suggestion sometimes operates during a hallucination, for it is sometimes difficult otherwise to account for the occasional agreement of two senses. For instance, a lady in the dark feels her husband's presence, then putting out her hand, feels his coat-sleeve, and then hears him speak. The husband, meanwhile, is absent and vividly imagining himself to be bringing her bad news." Two more explanations of collective hallucinations are set forth: the one that A sees a hallucination first and then conveys it by word or gesture to B; the other that the hallucination of one percipient is caused by mental suggestion or thought-transference from the other. An interesting experiment illustrating the latter hypothesis is given, to conclude Professor Sidgwick's account of the work on the census. It is an experiment in thought-transference with two hypnotized persons, conducted by Mrs. Sidgwick and a Mr. Smith. Here is the experiment as described in Professor Sidgwick's words:

"Two persons were hypnotized in different rooms. We will call them Mr. P. and Miss B. You are no doubt aware that good hypnotic subjects can be made to have post-hypnotic hallucinations—e. g., if told while hypnotized that they will see some specific object when they awake, they do see it, though there is nothing of the sort there. Mr. Smith told Mr. P. that Mrs. Sidgwick would show him a picture, and then went out of the room and told Miss B. that she would see a picture which Mr. P. would show her when her eyes were open. While he was away Mrs. Sidgwick told Mr. P. that she was going to show him a picture of a goat-chaise with two goats. Then Mr. Smith came back, awoke Mr. P., and left again immediately. After which Mrs. Sidgwick gave Mr. P. a blank card as a picture and he almost immediately saw on it the picture of a goat-chaise and two goats and was much pleased with it. Mrs. Sidgwick asked him to take it upstairs and show it to Miss B., but to be careful not to tell her what it was. This he did. Miss B. at first only saw something black on the card, then by degrees she saw, first some wheels, then 'a nice little wee carriage,' and presently some animals in front which she identified as two goats. This seems to be a case of collective hallucination, and one which was conveyed to Miss B. by thought-transference from Mr. P."

The census inquiry is also proceeding in America, France, Germany, and Italy, but no detailed reports have yet been received from these countries. A report on the census is to be made to the International Congress of Experimental Psychology in 1892, and it is hoped that 50,000 answers will be received by that time. Professor William James, of Harvard University, will willingly supply the necessary forms to any one in this country who is interested in this subject.

MENTAL HABIT.

AN INTERESTING WRITING TEST AND ITS RESULTS.

In a paper entitled "A Study in Mental Statistics," Prof. Jastrow describes the results of a mental test in which fifty students of a class in psychology, at the University of Wisconsin (twenty-five men and twenty-five women), took part. The task consisted in writing 100 words as rapidly as possible. The material thus collected was utilized to shed light upon (1) the similarity of our ideas and habits of thought, (2) the links that bind our ideas together, and (3) the time required for these processes. 1. The general tendency to regard one's mental habits and products as singular and original, and consequently to look upon every evidence of similarity of thought as a strange coincidence, receives a set-back from the result of the present and similar studies, for it is found that these fifty persons, independently writing one hundred words from the many thousand with which they are acquainted, all in all, select from the same 2,024; *i. e.*, of the 5,000 words written, only 2,024 are different. Again, 1,266 words occur but once in the aggregate lists, and omitting these we find that about 3,000 of the words are formed by the repetition of only 758 words. Passing to an analysis of this "mental community," it becomes clear that it is greatest at the beginning of the list, and becomes less toward the end; *i. e.*, the habit is to write first the most common, and when these are exhausted, the more unusual words. A very interesting point is the comparison of men and women in their tendency to repeat one another's thoughts. The evidence is unmistakable that the lists of words drawn up by the women are much more like one another than are those written by the men. The women use only 1,123 different words, the men 1,376. The women write but 520 words that occur but once in the lists, the men write 746 such words. 2. A study of the processes involved in these lists bases itself upon a careful analysis of the ideas therein represented. The relative sizes of such classes, in a measure, indicate the prominence of different

classes of objects in the minds of the writers. It may be interesting to mention that the five best represented classes (of the twenty-five adopted in the paper) are "Names of Animals," "Articles of Dress," "Proper Names," "Actions," "Implements and Utensils." The sexes present characteristic preferences for the various classes. The women contribute most largely to "Articles of Dress," writing 224 such words, while the men write but 129. They show an equal favoritism for "Articles of Food," writing 179 such words to but 53 for the men. The men, on the other hand show fondness for "Implements and Utensils," "Names of Animals," "Professions," "Abstract Terms," etc. Of the various links by which the one word suggests its successor, it may suffice to indicate as prominent types, (*a*) association by sound, in which words are rhymed, or begin with the same letter; (*b*) by belonging to the same class, as when a series of animals or articles of dress is formed; and (*c*) by more general but not briefly describable relations. One may combine the two inquiries (1) and (2) to ask how often the same word is associated with the same word in different lists. If we take the twenty words most frequently occurring, we find over 500 mentions; and if we examine in each case the word preceding the given word, we find it to be the same in 111 cases, and the succeeding word the same in 145 cases—certainly a remarkable result. Here, again, the women are found to repeat one another more than the men. 3. Regarding the time occupied in the process, the result reached is that (roughly speaking) it takes, on the average, 308 seconds to write such a list of 100 words; that 210 seconds are consumed in the mere act of writing, 114 seconds in thinking of what to write, and 16 seconds in which both may be done. These results are offered, in addition to whatever value they may posses, as an illustration of how, by simple experimental methods, we may become more intimate with the processes that we constantly but unconsciously perform.

ICE IN THE TROPICS.

UNPOPULARITY OF ICE IN TROPICAL REGIONS.

The town of Colon on the Ithmus of Panama, has three forlorn and unappreciated refrigerators. Cigars are stored in one of them, and a shopkeeper includes the other two among his unsalable lumber. The town has no use for ice, and refrigerators are a drug in the market. According to recent consular reports received at Washington, the only countries where ice is not popular are some tropical regions where one would suppose the cooling commodity would be welcomed as one of Heaven's best gifts. The little island of Reunion has ice and snow on the tops of two of its mountains, but the people regard them as damp and uncomfortable, and keep away. Most Brazilians believe that it is unhealthy to use ice in their climate. Three tons of ice a day suffices for the city of Santiago de Cuba with 48,000 inhabitants. Two-thirds of the population are Negroes and Consul Reimer writes that even if ice were cheaper, he is convinced they would not use it. In the Philippine Islands ice-water is regarded as injurious to health, and drinking-water is cooled by putting it into bottles which are laid on the ice. In Jaffa, the seaport of Jerusalem, a company was formed three years ago to make artificial ice, but the enterprise was soon abandoned, as customers were not found for the product. A liking for ice, like the taste for olives, must be cultivated. But there are other very good reasons why ice is not destined soon to come into general use in tropical towns. Most of their inhabitants are very poor, and ice is a luxury beyond their means. Not a few customers of ice in this city last summer reduced their daily supply when the price was advanced to a cent a pound. Perhaps some of them would have worried along without any ice at all if the ice merchant had demanded five cents a pound, as he does in Tangier, Managna, Iquique, Bahia, Valparaiso, and many other places, or even three and a half cents, the ruling rate in Rio de Janeiro. When ice sells at four-fifths the price of sugar, poor people have no opportunity to become familiar with its advantages. Most natives in the tropics, however, fail to understand that ice is useful for any purpose. The good housewife of Brazil, for instance, would think it very poor domestic economy to buy an ounce of meat or fruit not required for the day's needs. One of our consuls in Colombia says the people of that country have a prejudice against keeping fresh meat uncooked. They do not wish to preserve food. "The people of Dutch Guiana," writes Consul Browne, "buy only enough food to last from day to day." The habits and ideas of these people must be revolutionized before they will regard refrigerators with favor or have any use for ice. In the chief town of Dutch Guiana only 500 people in a population 27,000 use ice at all. Our consul at San Jose, the capital of Costa Rica, writes that the standard of comfort among the 25,000 people of that town is not sufficiently high to bring refrigerators into use. In Zanzibar and South Africa the high price of manufactured ice precludes any general use of it. Maine ice in considerable quantities finds its way to far southern latitudes. By the time congealed portions of the Kennebec River reach the Isthmus of Panama they are quoted at five cents a pound. The same ice at Nassau is worth four cents a pound, while at Bermuda it sells at the comparatively cheap rate of three-fourths of a cent a pound. The only cargo of ice ever landed in Cadiz went from Boston in 1856. The customs officers insisted that it must be landed on the docks in a burning sun and weighed like other freight. The argument that ensued lasted for several weeks, and most of the cargo turned into water before the vessel was unloaded. Two shipments of ice from New England have recently been sent to the tropical coast of West Africa, but neither proved profitable. No adequate means has yet been provided there for the preservation of ice, and the larger part of these cargoes melted before they could be sold. Recent attempts to develop a trade in ice between this country and Egypt have been unsuccessful because the artificial product made in Cairo, Alexandria, and Suez undersells the imported article; and one of the most interesting phases of the commerce in ice is the rapid growth of the manufacture of artificial ice in many parts of the tropical and semi-tropical world, even in Asia Minor, Fiji and the Philippine Islands. It is altogether likely that its production in tropical regions will gradually overcome the widely prevailing prejudice, and that ice will be used for other purposes than merely to cool beverages in barrooms for foreigners.—*Sun.*

HYPNOTISM.

A FRENCH GIRL'S REMARKABLE MESMERIC POWER.

A party of newspaper men and physicians in this city witnessed, on January 21st, a private exhibition of hypnotic power given by Mlle. Charcot, niece of the famous Paris alienist of that name. Mlle. Charcot is tall and slender, with dark hair and deep-set eyes. She had two subjects whom she had put under hypnotic influence on a previous occasion. Some physicians said the subjects gave the impression of being inclined to epilepsy. Manager E. G. Johnson spoke about the influence of personal magnetism, and then the performance began. One of the young men was put to sleep. He sat in his chair, his right hand crossed over his left. A needle was passed through each ear and the thread left dangling; his tongue was drawn out and a thread put through it. Blood did not flow, and Citizen Train, who was present, asked for blood. At the will of Mlle. Charcot it appeared upon the tongue. The young man was then awakened. The other subject was then hypnotized and made rigid. His head was placed on one chair, his feet on another, he formed a bridge on which two men weighing 365 pounds sat. A lighted cigar was then placed on the subject's forearm and the flesh sizzled. The man remained unconscious. A physician desired that the subject should be made to feel pain, and the young man immediately doubled up with the colic and jumped around the stage. Then Citizen Train, who had acted as psychic questioner, requested Mlle. Charcot to mesmerize some one in the audience. She went to the back of the hall, and a young man in the audience rose and went towards her. He acted as if dazed, as the others had. Mlle. Charcot was evidently much distressed after this. Her face was flushed and her eyes unnaturally bright. She said that the last test had exhausted her more than all the others. A person once acted upon is easier to put under the influence of the will than a fresh subject, and hypnotizers prefer to have former subjects in their public exhibitions.

POWER AND WASTE.—Maxim, the inventor of the "Maxim gun," claims to have constructed an engine of 500 horse-power, weighing, 1,100 pounds, or 2.2 pounds per horse-power. Some of the largest and most efficient engines have about 112 pounds dead weight per horse-power, including water.

GOLD WEAR.—By careful experiments made at the United States Mint it has been shown that $5 are lost by abrasion every time $1,000,000 in gold coin are handled. The experiments were conducted with bags containing $5,000 each, and it was shown that the mere lifting of the 200 bags making up $1,000,000 to a truck to be removed to another vault resulted in the loss stated, and that their transfer from the truck again made a second similar loss.

SOUND BELOW ZERO.—The velocity of sound in air at low temperatures has recently been measured by determining the interval between the flash of a gun 12.8 meters distant and the report. For temperatures 10.9 deg., 25.7 deg., 37.8 deg. and 45.6 deg. below zero (Centigrade) the velocities were 326.1, 317.1, 309.7 and 305.6 meters per second. From this it appears the velocity of sound diminishes 0.603 meter per second for each degree (Centigrade) or rise of temperature.

WATCHES AS COMPASSES.—"All watches are said to be compasses, and the matter is explained in this way," says a writer: "Point the hour hand to the sun and the south is exactly half way between the hour and the figure XII on the watch. For instance, suppose it is four o'clock. Point the hand indicating IV to the sun and II on the watch is exactly south. Suppose it is 8 o'clock, point the hand indicating VIII to the sun, and the figure X on the watch is due south. This is a good thing for woodmen and hunters to remember."

NOT ENTIRELY A SLAVE.—Visitor (philanthropically inclined)—Auntie, don't you think you would enjoy better health and live longer if you could quit smoking? Auntie (aged 98)—I don't smoke all the time, mum. Sometimes I go half a day 'thout touching' my pipe. Been doin' that away, off an' on, fur about—(to a great grandson)--you, George Wash'nton! give the lady a cheer ur I'll thess jerk the top o' yer head off'n ye!—fur about seventy-five year, mum. Land sakes, I aint no slave to the habit.

THEOSOPHIST.—The term "Karma" is employed by writers on Oriental supernaturalism, and has reference to the Indian doctrine of transmigration. One writer says that Karma represents the physical life of a man, his mental tendencies towards good or evil, his feelings and acts during life being, as it were, grouped in a form that attends his spirit or soul during the time that elapses between his death and birth into a new state. The character of this Karma attributes to its owner a high or low moral state, and has a bearing upon the sort of existence that will be his in the next form.

DON'T SCOLD.—How many lectures there are against scolding and fretting, and how true they all are, and yet how often do we forget to practice and profit by the truth. Suppose we begin in a small way at first, and resolve that we will not use a scolding or angry tone, and if we cannot help using cross words, let us speak them in a pleasent tone. The tone of scolding tells upon the throat just where a women who is not over-strong is apt to feel the ache of extreme fatigue. The children, too, who are great imitators, will be sure to catch the scolding tone. and will talk to their dolls, to one another, and by and by to their own children, very much as their mothers are now talking to them.

HOW WE CATCH COLD.

BY R. W. MILLER, M. D., LOS ANGELES.

In regard to the *modus operandi* or mechanism of those cases (of coryza) not referable to local irritants or of specific origin, several views have been offered in explanation. Dr. Carl Seiler, "Med. and Surg. Rep.," vol. XLIV, p. 565, quotes an anonymous writer in London *Lancet* as follows: "Practically the human organism must be maintained at a temperature equal to 96.5 deg. Fahr. in all climates. The source of this heat is within us, and we wear clothes to minimize the expenditure of this heat by radiation." Now observation of the origin of this heat is of practical importance in its bearing upon the etiology of coryza. It is produced chiefly in two ways: 1. By the oxidation of food; 2. By the conversion of muscular action into heat, according to the law of correlation of forces. The standard of heat given above is perhaps rather low. In order to maintain the proper standard the Esquimaux eats chiefly oils and fats, while those living in the tropics subsist chiefly upon vegetables and fruits. As the spring-time approaches, those of us living in the temperate and semi-tropic climate use less fatty and animal food, or, failing to observe the necessity of so doing, suffer from excess of animal heat, dyspepsia and congestion of the abdominal viscera, with an accumulation of effete products, which condition is a synonym for "spring fever." Is it not reasonable to infer that at other seasons of the year and under other circumstances these congestions and pent-up products may, in a measure, find expression in the form of a coryza? Rosenthal's view is that the immediate effect of cold, when applied to the surface of the body, is to contract the vessels, thus driving the blood to the internal organs, where it irritates and excites inflammation. There may be some truth in this, but it seems to us not to cover the entire ground, as from the external application of cold we may have eczema, a disease of the skin, or other inflammations of the deeper organs or viscera. The different chemical qualities of effete products within the body has been alluded to by some writers as having to do with determining the location of the inflammatory process. But what are those chemical qualities? What are those qualities having a harmful selective action upon the lining of the nasal chambers in one case and upon some other organ or visceras in another? Diathesis or dyscrasia may serve to answer this question in part, because of their attacking and breaking down the power of certain organs and tissues to resist disease, as the strumous diathesis affects chiefly the lymphatic system, while the rheumatic attacks the fibrous tissues, etc. Seitz's theory is that the rapid removal of heat, either from the external or internal surface of the body, causes some functional disturbance, which gives rise to some morbid process in a remote part. This is euphonious, yet seems rather much like dealing with "glittering generalities." The excess of ozone in the atmosphere is believed to act as a cause of coryza in very many cases. Bosworth believes the nervous system to play a very important role in the etiology of this disease. He almost goes so far as to express the belief that coryza is in many cases essentially a nervous disease. Any of us may well ask, how much of an impression upon the "internal organs" would be made by "local application of cold" and the "rapid extraction of heat," were there no nerves to convey these impressions? Certainly we must keep the nervous system prominently in view in all our efforts to solve this problem. I am inclined to the opinion that even a "reflex" nervous influence may be operative in causing acute coryza. It seems an established fact that intense nervous excitement will in some persons precipitate an attack. The causes are general, local, predisposing, and exciting. The first and last have already received considerable attention in this paper. To general causes may be added improper and insufficient clothing, an in-door life, insufficient physical exercise, lack of proper attention to bathing, and bad ventilation. Of local causes we may mention the inhalation of dust, irritating vapors from chemicals, etc., chronic thickening of the turbinated tissues, exostoses, enchondroses and deviations of the septum, polypi, congenital deformities, and all other obstructive lesions of the nares of whatever kind. Most of this latter list may also be considered predisposing causes. Of the general or constitutional predisposing causes, some of the most frequent are debility, dyspepsia (by compromising the generation of animal heat), struma, so called, the gouty and rheumatic diathesis, and tuberculosis. To these may be added atony, or a state of unstable equilibrium of the vaso-motor system of nerves, and this latter may be either general or local. In military life, the soldier, while acting as a sentry, becomes worn and weary, while his comrades renew their energies by sleep. So the nasal membrane, being always in the picket line, always on duty, and exposed to almost constant irritation, becomes weakened in functions, and this weakness in time becomes a predisposing cause of renewed attacks of coryza. Prophylaxis is highly important, and with many patients must enter largely into the treatment in order to prevent relapses. A careful observation of the manifold causes will serve to indicate the proper measures requisite to this end. Treatment is local and constitutional. Every case of coryza ought to be cured as quickly as possible. We must not here omit its importance in nurselings, as in them it sometimes leads to complications rapidly ending in death. In the way of local treatment, such remedies as constrict the vessels, as a two to four per cent. solution of cocaine, frequently applied, mild solutions of atropine used as sprays, powdered belladonna, morphia, bismuth and talc mixed, and used by insufflation three times in the twenty-four hours, are useful in the first stage. Regarding cocaine, it must be remembered that with some patients the effect is very transitory, while in others it seems almost entirely wanting; that reaction soon follows, unless the effect be steadily maintained, and, last, the highly important fact that great care is necessary in order that we may not become accessories to its too general and habitual employment by our patients and others. There is reason to fear that there may be truth in the accusation coming from some of these *habitues*, that "My physician taught me to use it." In those who are "always catching cold," and tell us they have colds the year round, careful inspection of the nares will usually discover some obstructive lesion, although, if it be swelling of the turbinated tissues, repeated examinations at different sittings may be necessary to detect it. The treatment of the permanent obstructive lesions is essentially surgical, operative procedure being best adapted to a large portion of them. Contact of the walls of the nares is almost always attended with decided hyperæsthesia of the parts involved, and usually maintains constant irritation until removed. The swelling of the turbinated tissues, when excessive, can usually be promptly controlled, at least for the time being, by cocainizing the parts and carefully applying the flat surface of a small electrode attached to the galvanocautery and brought to a medium heat. Of the constitutional remedies appropriate to these cases, almost all intelligent and well-informed practitioners of the present day are fully capable of making their own selections in the individual cases which they are called upon to treat. Brief allusion to a very few only will here be made. Opium, or some of its derivatives, in small, frequent doses, if the patient continue out-of-doors, remain among those having the strongest claim for our confidence. Antifebrin or pilocarpine, if diaphoresis be the chief aim, act well, while as analgesics, antikamnia, phenacetine, and antipyrine are often serviceable. Quinia is useful, both as an abortive and a prophylactic against relapses, but the fact that it congests the tympanum, and may contribute to producing deafness, temporary or permanent, should be borne in mind, and the laity should be warned against its too frequent and heroic employment.

FULMINATES.

WHAT THE FAMILIAR EXPLOSIVES ARE MADE OF.

Every one has noticed the grayish substance in the interior of a percussion cap, which only needs the blow of the hammer to cause it to explode with great violence. A similar substance is found in the torpedoes so popular among children on the Fourth of July. This body is known to chemists as fulminate of mercury, and is not only interesting from its chemical composition and relations, but is of great commercial importance, although a comparatively small quantity is needed to supply the demand for it. This exceedingly unstable and explosive substance is the mercuric salt of an acid known as fulminic acid (from *fulmen*, the thunderbolt). The free acid has never been produced, but the fulminate of mercury is easily and cheaply prepared, and has the empirical formula Hg C2 N2 O2. Like nearly all the compounds of nitrogen, the molecule is extremely unstable, and a slight blow, a temperature of 363 deg. F., or even contact with strong sulphuric or nitric acid, causes the molecule to break up like a house of cards, and to be transformed into nitrogen and carbonic oxide gases and vapor of mercury. Like nitro-glycerine and other high explosives, the reaction, or explosion, takes place in the molecule itself, and is not, as in the case of gunpowder, simply a very rapid combustion, and this property explains the intense force of the explosion. It is estimated that at the moment of explosion a pressure of 720,000 pounds to the square inch is generated. Mercuric fulminate is prepared by dissolving mercury in an excess of nitric acid, and adding alcohol; a very brisk reaction and effervescence soon begins, and the fulminate separates as a crystalline precipitate. The actual chemical changes which take place in this reaction are very complicated, and are not thoroughly understood, but the final result is as above stated. As soon as red fumes begin to appear, water is poured in to stop the reaction, and the precipitate collected on a filter, washed, and kept moist until needed for use. This experiment is a very dangerous one for inexperienced persons, both from the risk of explosion and the poisonous gases evolved, and should not be attempted by beginners in chemistry. Large quantities of this fulminate are manufactured at Prescott, in Ontario. Two or three times a year an American firm sends a party of workmen to this place with the necessary quantity of nitric acid, mercury, alcohol, etc., and for a few days the town is redolent with the fumes of alcohol, aldehyde, ethers, etc., until the desired amount of the explosive is prepared and safely packed in kegs of water for transportation to market. The profits are said to be very large, but we hardly think any one will grudge the manufacturers of this treacherous compound all that they can make out of it, or would desire to undertake the work themselves at any price. With proper care the risk of an accident is small, but when an explosion does occur the destruction is complete, and there is little or no chance for escape. The pure fulminate is so powerful that, in the manufacture of percussion caps, it is generally mixed with other substances to moderate the force of the explosives. Chlorate and nitrate of potash, sulphide of antimony, and powdered glass have been used for this purpose; but it is probable that they have no chemical effect upon the explosive decomposition, but simply act mechanically by diluting the pure fulminate. One pound of mercury will produce enough fulminate to fill over 25,000 percussion caps. One of the most interesting applications of fulminate of mercury is its property of detonating dynamite and other nitro-glycerine explosives. Dynamite cannot be easily exploded by contact with flame, and it may even take fire and burn up quietly, but if a tube containing fulminate of mercury be placed in the midst of a charge of dynamite and exploded in the usual way, it induces a similar explosion or detonation of the whole mass of dynamite with its well-known powerful effects. It seems as if the violent detonation or rapid molecular vibration of the

fulminate induced a similar detonatory vibration in the molecules of the dynamite, just as the strings of a piano are set into musical vibration when a note of the same pitch is sounded in their vicinity. Fulminate of silver is analogous in composition to that of mercury and is made in a similar way, but is much more violently explosive. It detonates when merely pressed with a hard body, and at a temperature a little above that of boiling water. Even when wet it is not safe to keep it in a glass bottle, and we know of a case where a quantity exploded while being washed on a filter, the probable cause being the friction of the stream of water which was being poured over it. The glass funnel was shattered into atoms, but the chemist who was washing it escaped, almost miraculously, without serious injury. A compound silver-ammonium fulminate is also known, which is even more violently explosive than the silver salt. Fulminates of zinc, copper, sodium, potassium, etc., are known and are all explosive, but have only a theoretical interest. Nitrogenous compounds of silver and gold are also known to chemists by the names of fulminating silver or gold, but they have no connection with the true fulminates, and are of little consequence. The effect of the element nitrogen upon its compounds is one of peculiar interest. The element itself is a neutral, inactive body, with no particlar characteristics and of little practical consequence, but when in combination with other elements it usually confers an element of instability upon the whole compound, like an arch with a defective keystone. If this falls, the whole arch is destroyed, and so in the molecules of the fulminates and similar bodies; the integrity of the molecule seems to depend upon the feeble chemical affinity of the nitrogen, and when this is overcome by percussion, heat or a stronger chemical affinity, the whole molecule collapses, as it were, with explosive violence, and is instantly changed into simpler and more stable chemical substances.—*Popular Science News.*

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

January.

MEATS.—Beef, mutton, ham, kidneys, liver, venison, sausage, pork.

GAME AND POULTRY.—Grouse, hare, pigeon, quail, chicken, duck, turkey, rabbit, geese.

FISH.—Bream, cod, crabs, eels, carp, flounder, halibut, herring, lobster, mackerel, mussels, oysters, perch, rock-fish, salmon, smelt, white-fish.

VEGETABLES.—Artichokes, beets, beans, cabbage, carrots, cauliflower, celery, garlic, lettuce, onions, parsley, parsnips, potatoes, shallots, spinach, squash, tomatoes, turnips.

FRUIT.—Apples, bananas, grapes, oranges.

PRACTICAL RECIPES.

RICE AND PEA SOUP.—Boil until tender, in different pots, a cup of dried green peas, and three heaping tablespoonfuls of rice; when done put them together and add one quart of soup stock or mutton broth; boil up, season with salt and pepper and serve with bits of toast.

CURRIED MUTTON.—Mince very fine any left-over cold mutton; add to it half an onion, minced; salt and pepper and a little curry powder; moisten well with milk; heat thoroughly and serve.

GREEN PEA FRITTERS.—Make a good batter for fritters, using one pint of milk, three well beaten eggs, yolks and whites beaten separately, one teaspoonful of baking powder and a little salt. To this put a half cup of parsley and sweet herbs, chopped fine and seasoned with pepper and salt, and half a cup of green peas. Fry in boiling fat, drain and serve very hot.

CHICKEN MAYONNAISE.—Boil a fine chicken in bouillon broth, if you have it, if not, in water. When it is done take it out and remove all the flesh from the bones; take out carefully all the skin and cut the meat into dice; put it in a dish and pour over it, several hours before using, three large tablespoonfuls of vinegar and one and a half of sweet oil beaten together and seasoned highly with salt and pepper. When ready to serve make a deep bed of fresh crisp lettuce on a dish and put the chicken in the centre of it, then cover the chicken with a rich mayonnaise, put bits of hard boiled eggs, capers, cold boiled beets and olives on top and it is ready.

CRULLERS.—A quarter pound fresh butter, one quarter pound powdered sugar, four well beaten eggs. Beat butter and sugar together, add eggs and then enough flour to enable you to roll them out; also one quarter grated nutmeg. Cut the paste into long, narrow pieces, cut a slit in the centre of each, twist the bars over each other and fry in boiling lard to a light brown, then drain them and dust them with powdered sugar.

COCOANUT APPLE PIE.—Pare some rich juicy apples and stew them until done; sweeten and flavor them with grated lomon peel. Line a deep pie-plate with a good paste, fill it with the apples and bake in a quick oven until just done, then have ready some grated fresh cocoanut, or crystallized cocoanut, spread it over the apple and cover with a meringue or not, as you choose, put in the oven for a few moments to heat the meringue or just brown the cocoanut. Eat cold

CHUTNEY SAUCE.—Peel and slice a dozen apples and let them cook very gently until they are nearly pulp, then add to them one half pound dates cut in small bits, with the stones removed, one half pound raisins stoned and quartered, four ounces shalots skinned and sliced, four ounces fresh Chili peppers, and two ounces green ginger. Mix six ounces of brown sugar with the same quantity of salt in an earthenware pan, and pour one quart of vinegar over. When quite dissolved, strain through a sieve, and mix all the ingredients together thoroughly; then put into a jar, and let it stand in the sun, or else let it stand on the corner of a warm hearth. It should not be used for six months.

PIE FOR LUNCH.

A WARNING AGAINST A GASTRONOMIC ABOMINATION.

I say unto such of you as would preserve intact the inside garments of your respective stomachs, choose with exceeding care the companions of your mid-day lunch. For pitch is not more likely to stick to whoever touches it than is abstemiousness to drop from one who consorts with pie-eaters and other cannibals. Heavy, even as heavy as the crust thereof, is the spirit of the devourer of pie at noon. And he who succumbs to the temptation of a plate of wheats is flatter than either the plate or the wheats. Therefore, when noon comes get ye to a bunnery; or, if you must needs go where pies are sold, take heed how you are accompanied. Verily, it is harder for a rich man to pass through a needle's eye than for an eater of sandwiches to resist the allurements of pie as flaunted before his face day by day by so-called friends. And once fallen from grace, no derrick of cast-iron resolve shall lift a man to the atmosphere of sandwiches and virtue again. As in the case of the first fall, the flavor of the forbidden fruit spoils the palate for that which is innocuous. Once I was gastronomically as pure as the beautiful snow, but I fell—through the machinations of one who called himself my friend. His plan had a devilish malignity about it that should be a letter of recommendation for him in hades. It was merely to eat pie beside me each day as I munched my plain sandwich, and to simulate in dumb show ecstatic delight in its savor. This plan breaks down the resolution by the slow and insidious process of undermining, and is much more effectual than any sudden coercion. Well, not to dwell on any ghastly details, I am now a pie-eater, within the full legal meaning of the term. Of such are the legion of pale spirits who hurry through the business streets at noon seeking pie and an early grave. They find the said pie, and the said grave finds them. If a million tallow-faced dyspeptics and a million unhonored graves attest the fatal work of the American pie, yet men there are who live and grow fat by means of it. These are the men who sell it to the men who eat it, and the men who write jokes about it for other men to laugh at if they (the other men) can. Thus the American pie is both filling and nutritious to those who refrain from eating it. It fattens the man who does not eat it and thins the man who does. And the grave fattens by both; in the one case by the greater number of its victims, and in the other by their greater rotundity.—*Hotel Mail.*

BEEF-TEA.

A WARNING AGAINST A COMMON DELUSION.

Commenting on the directions for making beef-tea, as laid down by a teaching professor, E. B. Ward, according to the *American Lancet*, says: "We take a pound of finely-cut beef and pour a pint of cold water on it, and let it stand two hours—while we write about it. The water is not near sufficient to cover the beef, but with occasional agitation we get at the essence; and at the end of two hours we find the meat surrounded by a reddish-colored liquid. Put a little of this fluid into a test-tube, and hold it in the flame of a spirit lamp. You see it coagulates to the extent of one-fourth, perhaps. What is that? Well, never mind now, we are going to make some beef-tea. Now we proceed to 'boil the whole.' He doesn't say how long, and it does not make much difference so long as the water holds out. Now 'strain and add sufficient water to make a pint.' You perceive that it is too strong, and has to be diluted. Let us take a little of this concentrated essence in a test-tube and examine it. Here is a translucent fluid with a bland taste, a neutral reaction, and a slight odor of beef. By closer inspection you observe little fine particles of sediment slowly settling. This, Pavy says, should be stirred up and given with the tea, but as it is only particles of coagula which have skipped through the strainer, let us have it out. If part of it ought to come out, it all should. So we will filter this liquid, and you will observe we have a limpid, almost colorless, fluid left, and a slight deposit on the filter. What is it? Well, we shall see shortly. Now take a little of this liquid in a test-tube, and drop a few drops of nitric acid into it. There is no precipitate formed, so we know there is no albumen or fibrin in it. What is in it? Well, there is a little saline matter, and—a world of disappointment to any one who tries to sustain life with it. That is about all. Why? Well, the thing is too absurd to talk about. Common well-water, containing the average amount of bacteria, is more nourishing. Thousands of sick people have been starved to death on this diet, and I want to enter my solemn protest against it before it is everlastingly too late. What you want is the albumen and fibrin of the meat in a condition requiring little digestive power and that will be readily assimilated. The moment you coagulate these ingredients by heat you render them practically indigestible. These, however, by this process are mostly strained out, and the fluid left is inert, or nearly so. Good milk is preferable always, but if you must give beef-tea, never boil it. Liebig says 120 deg. Fahr. is the highest temperature to which it should be subjected. It is not very inviting in its general aspect, but it holds in solution the ingredients that you want, and which are rendered useless for a weak digestion by boil-

ing. Liebig's plan is to add a little hydrochloric acid. Perhaps there is nothing in the whole round of dietetics, however, that holds so much real, needed food in a given space as good, rich milk punch—teetotalers to the contrary notwithstanding.

ART AND CRITICS.

AN EXPLANATION OF SOME SEEMING ANACHRONISMS OF THE OLD MASTERS.

In all departments of art the world loses much by reason of the interference of strangers between the artist and those to whom he addresses himself. These strangers are called critics, who profess to be interpreters between art and the people. In general they are dull fellows, who have a notion that all art language is one and the same, and most of them seem to think that in every picture the artist says only "look at this and see how well I have done it." Hence comes the rubbish called criticism which so much abounds, and which not only hampers art but misleads people and prevents their enjoyment of and instruction by works of art. There are necessarily difficulties in learning the languages which artists have used. For every one who intelligently addresses others in writing or in picture endeavors to use a language which they understand. There is a great variety of languages in a gallery of pictures, analogous to that in a collection of books. The language of pictures is not only different according to period and country, but is often dialectic and local. The simplest illustration of this is found in caricature, whose force depends often on the local events of a passing period, and which may be as unintelligible in remote times or places as is Sanscrit to a school-boy. So Chinese or Japanese art conveys few if any ideas to western minds. And so too a large portion of the art production of the fifteenth and sixteenth centuries in Europe presents difficulties to the nineteenth century mind not altogether unlike those found in the literature of the same period. There is a prevalent characteristic of European pictures of that period which has caused many critics to stumble. They are constantly finding fault with what they call anachronsims in them. In almost every case there is no anachronism, and the trouble is that the critic does not understand the language of the artist, and misapprehends what he made the picture to teach or tell. Take an example. In Durer's series, commonly called the Life of the Virgin, is a remarkable cut, which is known as The Birth of the Virgin. It represents the interior or Nuremburg house of Durer's time, with all the ordinary furniture and surroundings of his period. The people are Nuremburg people and the entire scene and scenery must have been familiar to his contemporaries. Critics speak of this as strange anachronism. Jackson and Chatto, in their treatise on the History of Wood Engraving (a work abounding in error, misinformation and dogmatism), cite the cut as a "striking example of the little attention which Durer, in common with most other German painters of that period, paid to propriety of costume in the treatment of such subjects." "The piece is Hebrew," they continue, "of the age of Herod the Great; but the scenery, dresses and decorations are German, of the time of Maximilian I." This criticism is of course intended to suggest to the reader that the critic knows what costume and scenery the author should have used. But a moment's reflection will convince you that he knows nothing about it, and that no one knows what kind of a room, decoration, furniture or clothing were properties of Joachin and his neighbors. But is it not very clear that the criticism which says "the piece is Hebrew" cannot be exact when there is nothing Hebrew about it; and especially when the artist was working for a Christian people, and the subject is one in which Christians of his time had very great interest and Hebrews no interest. Whatever Hebrew relations the birth of the Virgin had are carefully left out of the picture. You must ask the artist himself what he means by the picture. You can certainly see very plainly what he did not mean. He did not say: "This picture represents the circumstances, room, dresses, people, furniture, which surrounded St. Anna when her child Mary was borne in the days of Herod." Durer was not only a great artist, he was a man of learning, read Greek and Latin, was a scholar in a social circle of scholars. He knew as well as any modern critic that this picture did not represent to the eye anything ancient. There is no anachronism in the picture itself Anachronism is a confusion of facts, or of dates of facts. There is no confusion. Everything in the design is synchronous. The artist so intended it. The purpose of the artist must have been served by this intent and its execution. I have made distinct the doctrine that all pictures are language. This is the lesson of the present discussion. You and I are not Nuremburg or German people of 1511 and are not the people to whom Durer spoke in picture. Even the most learned Germans to-day cannot agree on the meaning of passages in his written letters. The German spoken and written language has undergone great changes. So has the picture language. Perhaps in this picture there are hints, allusions, suggestions, quite intelligible in 1511, quite lost to us. Why, for instance, does that pretty and graceful young girl stand so prominently among the matrons? Why is there only one candle in the candelabrum and that not lighted? But the language of art is in many respects intelligible to all ages; and perhaps it is in this that the greatness of art consists, its intelligibility and forcible address to generation after generation. There is no possibility of misreading some of the great lessons in this picture, if you exercise your good sense and ability. An ordinary description, a reading aloud of the picture, in our English language may help you to know what Durer meant to say. Try it. In a large room, each detail of household furnishing being given, are fourteen persons, twelve women and two children. One of the women seated apart from all the others on a bench which is in fact the projection of an old chest, holds in her lap a new-born babe. None of the others look toward the babe or are in any visible way concerned about it or interested in this babe. Nothing in the room, the scene, the action or motive of the picture, implies that the babe is an important feature of the occasion. The women are variously occupied, in gossiping, drinking beer or wine; one is asleep, two minister to the mother lying in her bed in the background. In brief, the neighbors, her friends, have, in Nuremburg fashion, come to be with the mother, the child is born, the mother is doing well, all are happy, and the child has commenced life, just like all human children, among the ordinary surroundings of human life. The picture, thus far, says plainly that there was nothing extraordinary about the occurrence itself, the coming into the world of this little daughter of Anna, wife of Joachim. But there is another and the dominant part of the picture. The lofty room rises into another world. A cloud rolls over the gossiping group and hides from them what the artist reveals to you above it, the Angel of the Apocalypse, holding the golden censer wherewith to offer the prayers of the saints. The birth which does not attract to the child even a look from one of the gossiping attendants, is nevertheless an event which affects the relations of earth to heaven, and has to do with the whole Christian faith and family. Whether Durer intended to express any opinion on the mooted doctrine of the Immaculate Conception, or to indicate his views in any particular about the office of the Virgin Mother, it is not possible to affirm. The picture is equally acceptable to Protestants and Romans in teaching that the daughter of Anna was she whom all generations would call blessed. You will find a similar explanation of much that is called anachronism in old art. Thus the pretence of cannon and other modern arms in Strasburg, and other editions of Livy, is certainly not due to any ignorance on the part of artists or people. The same cuts were used over and over in successive editions, without provoking censure. It is clear that the idea of these pictures was not to illustrate the scene, but to illustrate some thought, such perhaps as the mere general idea of war, a battle, a siege. This is more probable because for full a century after books were first printed the insertion of pictures was often quite as much for the mere sake of ornament as for the sake of illustrating the text. The frequent repetition of the same picture in different parts of a book is thus easily explained. In the earlier books, down to the Durer period, every picture which appeared in a book was unfinished till the painter had finished the coloring. Neglect of this fact makes worthless the criticisms of Chatto and many other writers on early wood engraving. There is deep interest in studying the gradual change which took place in the pictures as the purpose of illustrating the text overcame the old purpose of ornamentation of the book.—*Correspondence Journal of Commerce.*

OBSERVATION.

THE ADVANTAGE OF KEEPING ONE'S EYES AND BRAIN IN CLOSE SYMPATHY.

The late Henry Ward Beecher once said that he never saw anybody do anything without watching to see how it was done, as there was no knowing but that some time he might have to do it himself. This habit of observation once served him in good stead. "I was going," he says, "across a prairie when my horse began to limp. Luckily, I came across a blacksmith's shop, but the smith was not at home. I asked the woman of the house if she would allow me to start a fire and make the shoe. She said I might if I knew how. So I started the fire and heated the shoe red hot, and turned it to fit my horse's foot, and pared the hoofs, and turned the points of the nails out cunningly, as I had seen the blacksmith do, so that in driving into the hoof they should not get into the quick, and I shod the horse. At the next place I went to I went straight to a smith and told him to put the shoe on properly. He looked at the horse's foot and paid me the greatest compliment I ever received in my life. He told me if I put on that shoe, I had better follow blacksmithing all my life. Now, I never should have known how to do that if I had not looked on and seen others do it." Another writer on the same subject says: Every one should cultivate the faculty of observation. If he does so designedly, it will not be long before he will do so unconsciously. It is better to learn a thing by observation than by experience, especially if it is something to our detriment. One would prefer to know which is the toadstool and which is the mushroom by observation rather than by experiment, for the latter might cost him his life. There is hardly a vocation in which observation is not of great service, and in many it is absolutely essential. It adds to the proficiency of the chemist, the naturalist, the mining expert, and the bushman. Observation quickens experiment. It leads to inference, to deduction, to classification, and thus theories are formulated, sciences established. An observing boy will become an observing man, and, as boy and man, he will have an advantage over those who have not cultivated the faculty. He knows a thousand things that the unobservant boy does not know. He does not get the knowledge from books or from others, but acquires it for himself, through the use of his eyes and ears, and properly appreciates it for that reason. A child may know more than a philosopher about matters that may not have come under the observation of the philosopher. A little girl entered the study of Mezerai, the celebrated historian, and asked him for a coal of fire. "But you haven't brought a shovel," he said. "I don't need any," was her reply. And then, very much to his astonishment, she filled her hand with ashes and put the live coal on top. No doubt the learned man knew that ashes were a bad conductor of heat, but he had never seen the fact verified in such a practical manner.

Indigestion

Horsford's Acid Phosphate.

A preparation of phosphoric acid and the phosphates required for perfect digestion. It promotes digestion without injury, and thereby relieves those diseases arising from a disordered stomach.

Dr. E. J. WILLIAMSON, St. Louis, Mo., says: "Marked beneficial results in imperfect digestion."

Dr. W. W. SCOFIELD, Dalton, Mass., says: "It promotes digestion and overcomes acid stomach."

Dr. F. G. MCGAVOCK, McGavock, Ark., says: "It acts beneficially in obstinate indigestion."

Descriptive pamphlet free.

RUMFORD CHEMICAL WORKS,
PROVIDENCE, R. I.

BEWARE OF SUBSTITUTES AND IMITATIONS.

Caution:—Be sure the word "Horsford's" is *printed* on the label. All others are spurious. Never sold in bulk.

CLEVELAND'S SUPERIOR Baking Powder.

The Official Reports of the
United States Government, 1889,
Canadian Government, 1889,
New Jersey Commission, 1889,
Ohio Food Commission, 1887,
prove that Cleveland's is

THE STRONGEST

of all the pure* cream of tartar baking powders.

*Ammonia or alum powders, whatever their strength, should be avoided as injurious.

Piso's Remedy for Catarrh is the Best, Easiest to Use, and Cheapest.
CATARRH
Sold by druggists or sent by mail. 50c. H. T. Hazeltine, Warren, Pa.

Galileo noticed the swaying of a chandelier in a cathedral, and it suggested the pendulum to him. To another inventor the power of steam and its application was suggested by the tea kettle on the stove. A poor monk discovered gunpowder, and an optician's boy the magnifying lens.

BUSINESS NOTES.

GOOD FOR ALL THREE.

The greatest good for the greatest number is the mark aimed at by all reformers, and to reach it secures the greatest acclaim of fame that can be had. It is a good thing for the consumer, for the manufacturer, for the newspapers, when an article of merit is put upon the market, is made known by newspaper advertising, and, through a series of years, proves its worth to lessen labor in millions of homes, profits the newspapers, and gives its makers a fair living. Pearline, the great washing powder manufactured by James Pyle & Sons, New York, has done all this. If it is not making labor easier in your home, it is your fault. Something of its history is made plain in an advertisement in another column.

ARCTIC PROGRESS.—A telephone line about five miles long has been established in Iceland, and is regarded as a great curiosity, being the first ever established on the island.

ANCIENT DRILLS.—Recent investigation into the curious question of the use of an annular drill by the ancients lead to the conclusion that jewel points were used in both drilling and sawing.

TO MAKE ROSES BLOOM.—Scrape from the chimney or stove-pipe, where wood is used for fuel, a quantity of soot. Put into a vessel and pour boiling water over it. Let stand for a few days, and then use the liquid to water the earth around the plants. The application should be made every two or three days.

TO REMOVE INK FROM CARPETS.—First take up as much as possible of the ink with a teaspoon. Then pour cold sweet milk upon the spot, and take up as before, pouring on milk until at last it becomes only slightly tinged with black. Then wash with cold water, and absorb with a cloth without too much rubbing.

ARTIFICIAL MALACHITE.—Artificial malachite, capable of receiving a fine polish, and closely resembling the natural stone, is made by precipitating, in the cold, a solution of cupric sulphate by potassium or sodium carbonate. Let the whole stand until the precipitate has settled completely and cohered, then dry with gentle heat. The resultant mass may be cut and polished by any methods.

TO CLEAN GLOBES.—If the globes on a gas fixture are much stained on the outside by smoke, soak them in tolerably hot water, in which a little washing soda has been dissolved. Then put a teaspoonful of powdered ammonia in a pan of lukewarm water, and with a hard brush scrub the globes until the smoke stains disappear. Rinse in clean cold water. They will be as white as if new.

ALCOHOL IN OILS.—Take a slim glass tube eight or ten inches in length, closed at one end, and as large as your finger. Put in an ounce or two of oil, paste a piece of paper on the outside of the glass, so that its lower edge will be even with the top of the oil, then add two or three times as much soft water, and shake well for a few moments. When it has settled, in an hour or so, the water will have absorbed the alcohol from the oil, which will show proportionately below the line first fixed.

TO STAIN MARBLE.—Marble may be stained different colors by using the following substances: Blue, solution of litmus; green, wax colored with verdigris; yellow, tincture of gamboge or turmeric; red, tincture of alkanet or dragons-blood; crimson, alkanet in turpentine; brown, tincture of logwood; gold, equal parts of verdigris, sal ammoniac, and zinc sulphate in fine powder. The marble should be not quite polished, but made perfectly smooth, and ready to receive the highest finish before the stain is applied. The longer the stain is left in contact the better the result.

LACTITE.—A new material called "lactite" has recently appeared in England as a substitute for bone or celluloid. Casein is the principal constituent.

POWDER AND ELECTRIC LIGHT.—The national powder mill at St. Médard-en-Jalle, in France, has recently been lighted by incandescent lamps, and is believed to be the first mill of its class on the Continent to use electric lighting.

ROBUST ZEPHYR.—It is stated that in a recent gale the anemometers on the top of the Eiffel Tower registered 630 miles per hour. M. Mascart says that had this velocity occurred at the level of the city every chimney would have been leveled to the ground.

RUNS IN THE FAMILY.—Domestic troubles and divorces seem to run in families like some hereditary disease. In one family in Atchison, Kansas, the grandparents quarreled all their lives, the mother and father have separated, and four of the six married children have been in divorce cases.

PORTABLE STORAGE BATTERIES.—Ordinary accumulators or storage batteries for electrical work are not very portable, owing to the liquids they contain. In consequence of this trouble it has been proposed to add a little sodium silicate to the cell, which has the effect of turning a sulphuric acid solution into a jelly.

GOOD TO REMEMBER.—A blush is a temporary erythema and calorific effulgence of the physiognomy, ætiologized by the perceptiveness of the sensorium when in a predicament of unequilibrity from a sense of shame, anger, etc., eventuating in a paresis of the vaso-motor nervous filaments of the facial capillaries, whereby being divested of their elasticity, are suffused with radiant, aerated, compound-nutritive circulating liquid, emanating from an intimidated præcordia.

Fine Table Wines

From our Celebrated Orleans Vineyard.

Arpad Haraszthy & Co.

Producers of the
ECLIPSE
CHAMPAGNE,
530 Washington St.
SAN FRANCISCO.

GENERAL AGENCIES:
NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOSEPH R. PEEBLES' SONS CO., 73 West Fourth Street.
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.

PUBLICATIONS OF THE
ANALYST PUBLISHING CO.

THE AMERICAN ANALYST.
Weekly. Every Thursday. $1 per year.

THE ROOFER, TINNER AND SHEET-IRON WORKER.
Monthly. 15th each month, $1 per year.

THE LEATHER MANUFACTURER.
Monthly. 1st each month. $3 per year.

Reliable agents and representatives wanted everywhere on liberal terms. Address

ANALYST PUBLISHING CO.
19 PARK PLACE, NEW YORK.

THE N. Y. HAY EXCHANGE BULLETIN.

OFFICIAL REPORT OF THE HAY AND STRAW MARKET AT NEW YORK.

COMMISSION SALESMEN.

NOTICE.

These names are arranged alphabetically.

WM. AFFLECK & CO.,
Commission Merchants in
HAY AND STRAW,
Office No. 5,
N. Y. Hay Exchange Building.

J. ALSDORF,
Commission Dealer in
HAY AND STRAW,
33d Street and 11th Ave.,
NEW YORK.

C. A. DECKER. F. W. TOMPKINS.
DECKER & TOMPKINS,
Commission Merchants in
HAY, STRAW, GRAIN,
Office: 16 New York Hay Exchange Building.

L. S. DILLENBACK. T. O. PECK.
DILLENBACK & PECK,
MAIN OFFICE:
Room O, N. Y. HAY EXCHANGE, N. Y. City.
STOREHOUSE AND BRANCH OFFICE:
101, 103 and 105 North 5th St.,
and 152 and 154 Berry St.,
Palmer's Dock. Brooklyn, E. D.

EDWIN B. DUSENBERRY,
COMMISSION MERCHANT,
And Wholesale Dealer in
HAY, STRAW AND GRAIN.
No. 1, N. Y. Hay Exchange, New York.

THOS. FONDA & CO.,
Commission Merchants
And Dealers in Hay, Straw, Grain and Country Produce,
13 & 14 N. Y. Hay Exchange Building.

N. A. FULLER,
COMMISSION MERCHANT IN
HAY AND STRAW,
33d Street and 11th Ave.,
NEW YORK.

THEO. P. HUFFMAN & CO.,
COMMISSION MERCHANTS
In Hay, Straw, Grain, Feed, &c.,
648 & 650 West 34th Street,
Bet. 11th & 12th Aves., N. Y.

H. B. Jenkins. F. S. Williams.
JENKINS & WILLIAMS.
COMMISSION MERCHANTS IN
HAY, STRAW AND GRAIN,
HAY EXCHANGE.

The N. Y. Hay Exchange is located at 601 W. 33d St., corner 11th Avenue.

Only the cards of members of the N. Y. Hay Exchange appear on this page.

RULES FOR GRADING HAY AND STRAW

As Adopted by the N. Y. Hay Exchange.

CHOICE OR PRIME HAY—Shall be pure timothy, properly cured, bright, natural color, sound and well baled. No. 1—Shall be timothy, not more than one-eighth (⅛) mixed with "red top" properly cured, bright natural color, sound and well baled. No. 2—Shall be timothy, not more than one-quarter (¼) mixed with red top and blue grass, properly cured, good color, sound and well baled. No. 3—Shall include all timothy not good enough for No. 2, proportionately mixed with blue grass, red top, and clover, sound and well baled. SHIPPING—Shall include all hay not good enough for other grades, and may be natural meadow, free from wild or bog grass, and must not contain over one-third (⅓) clover, sound and well baled. CLOVER MIXED—Shall include all hay containing not over two-third (⅔) clover, and one-third (⅓) timothy, properly cured, sound, and well baled. CLOVER—Shall be medium grown, properly cured, good color, sound, and well baled. NO GRADE OR REJECTED HAY—Shall include all hay badly cured, musty, stained, or in any way unsound.

No. 1. RYE STRAW—Shall be clean, bright, long Rye, in bundles, sound, well and securely baled. No. 2—Shall be long Rye, in bundles, sound, well and securely baled. SHORT RYE—Shall be clean, not bundled, sound, well and securely baled. OAT STRAW—Shall be clean, bright, sound, well and securely baled.

In the New York market bale-wood is weighed in without tare. In all other markets it is deducted.

These quotations for choice, No. 1 and No. 2 hay are for large bales. 5c. per cwt. less when in perpetual press bales.

The New York quotations are per cwt. At other points, per ton.

NEW YORK, Jan. 26, 1891.

The following are the market prices to-day at New York.

	New York.
Prime Hay	65c. @
No. 1	60 @
No. 2	50 @ 55
No. 3	45 @ 50
Shipping	45 @
Clover mixed	45 @ 50
Clover	40 @
Prime Rye Straw	95 @
No. 2 "	75 @ 85
Short "	60 @
Oat and Wheat	50 @

Receipts week ending Jan. 24, as follows:

Via N. Y. Central	206 cars.
" West Shore	119 "
Other roads by Lighter, 34th Street	19 "
Total	344 cars.
Total last week	454 "
Decrease	110 "

Very little can be said to change the tone of last week's report, except that shipping grades or even a poorer quality is in better favor and sells more readily, partly on account of its being scarce, and also a greater demand for that kind of stock just now. A peculiar feature is noticeable in the present market on hay grading No. 2 or fair No. 1, as it is difficult to get a price proportionate as to quality between shipping and No. 1 or fancy.

Perpetual pressed hay still dull and selling from 45c. to 55c.

Rye straw in good demand and selling freely at quotation prices.

OSCAR KENT,
Commission Merchant,
HAY AND STRAW,
Room 20, New York Hay Exchange Building.
Personal attention guaranteed all consignments

JOHN KERWIN & SON,
DIRECT RECEIVERS OF
HAY, GRAIN and GENERAL PRODUCE
DEPOT AND STOREHOUSES,
Palmer's Dock, Nos. 97 & 99 North Fifth Street,
BROOKLYN, N. Y.
SHIPPING ADDRESS, PALMER'S DOCK, BROOKLYN, N.Y
West Shore R. R., N. Y. C. & H. R. R. R., N. Y. L. E. & W. R. R., Pennsylvania R. R., D. L. & W. R. R., Lehigh Valley R. R., and connections.

W. J. OVEROCKER. PERRY HATCH.
OVEROCKER & HATCH,
Commission Merchants in
HAY, STRAW AND GRAIN.
33d Street & 11th Avenue, New York.
References: West Side Bank, New York City; Exchange Bank, Holly, N. Y.

Gilbert Plowman, NEW YORK. Spencer Billington, FORT HUNTER, N. Y.
PLOWMAN & BILLINGTON
COMMISSION MERCHANTS,
HAY, STRAW, GRAIN, &c.
No. 15 N. Y. Hay Exchange,
33d St. & 11th Ave., NEW YORK.

JAMES ROZELL & SON,
Commission Merchants and Wholesale Dealers in
HAY, STRAW, GRAIN AND COUNTRY PRODUCE.
N. Y. Hay Exchange, New York.

SKINNER, BLOOM & CO.,
Successors to Rogers, Skinner & Co.,
COMMISSION MERCHANTS
And Dealers in
Grain, Flour, Hay, Feed, Meal, &c.,
74 CORTLANDT STREET, - NEW YORK.
Barge GYPSIE, Foot Bridge St., Brooklyn.

H. SLINGERLAND,
Barges MERCHANT and HARVEST QUEEN
Foot of West 11th Street,
HAY AND STRAW.
Also, 33d and 35th Streets, and all Railroad terminals. Special facilities for lighterage free goods.

CHARLES F. SWAN,
Commission Merchant in
HAY, STRAW & GRAIN,
At all the Railroad Terminals in New York, Brooklyn, Jersey City, &c.
MAIN OFFICE,
108 BROAD ST., NEW YORK.

TITUS, WELLS & WILLETS,
Commission Merchants and Dealers in
HAY AND STRAW,
133 Roosevelt St.,
NEW YORK.

VAN ALSTYNE & CO.,
COMMISSION MERCHANTS.
SPECIALTIES:
HAY, STRAW & FLOUR,
Nos. 2 and 4 Stone St., New York.
Liberal advances made on consignments.

G. E. Van Vorst. James M. Hillery.
VAN VORST & CO.,
COMMISSION MERCHANTS,
HAY, STRAW AND GRAIN
N. Y. Hay Exchange, 33d St., & 11th Ave.
562 & 564 West 34th St., NEW YORK.

NOTICE.

These names are arranged alphabetically.

HOSMER, CRAMPTON & HAMMOND,

NO. 43 COMMERCIAL STREET,

BOSTON.

COMMISSION MERCHANTS,

HAY, STRAW, FLOUR & GRAIN.

E. B. HOSMER, G. W. CRAMPTON, BENJAMIN HAMMOND, A. L. ROBINSON.

BOSTON HAY AND STRAW MARKET.

Hay, choice to fancy in large bales	$14.00 to $15.00
Hay, choice to fancy, perpetual pressed bales	13.00 to 13.50
Hay, fair to good	11.50 to 12.50
Hay, poor to ordinary	9.00 to 11.00
Hay, Clover and Clover mixed	9.00 to 11.00
Hay, swale	9.00 to
Straw, Rye, good to prime	17.50 to 18.00
Straw, Oat	9.00 to 10.00

BOSTON, Jan. 26th, 1891.

Receipts for the week are 356 cars of hay and 36 cars of straw; corresponding week last year, 187 cars of hay and 19 cars of straw. There is little change to note in the general condition of the hay market from a week ago. Receipts continue in excess of the demand. The market is dull and weak in consequence. Quotations are nominal, as receivers are anxious to move stock, and frequently shade prices in order to do so. Rye straw is steady at quotations.

H. F. WILSON,

WIRE BALE TIES,

458 WEST 38th STREET, New York.

40 COUPON OFFERS

and our large Illustrated Catalogue of SCROLL SAWS, Tools, Designs, and 30 Cts. WORTH of *full size* SCROLL SAW DESIGNS, sent FREE for 10 Cts. in stamps to pay postage.

JOHN WILKINSON CO., 269 State St., Chicago.

CHALLEN'S LABOR SAVING RECORDS are used and *re-ordered by* 3000 Advertisers and 3000 Newspapers. Try them for every line of business and profession.

CHALLEN, Publisher,

10 Spruce St., New York.

HAMMOND'S

CELEBRATED

Calumet Oleomargarine

Strictly pure, cheap and healthful.

Ask your grocer for it.

Put up in packages of all sizes, also prints and rolls.

G. H. HAMMOND CO.,

607 to 615 THE ROOKERY,

CHICAGO.

Also offices at Boston, South Omaha, Neb., and Hammond, Ind.

SWIFT'S

CHOICE

Chicago Dressed Beef

AND

MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,

UNION STOCK YARDS,

CHICAGO, ILLS.

The Standard of Excellence.

KINGSFORD'S

OSWEGO

Pure and Silver Gloss



STARCH

KINGSFORD'S

OSWEGO CORN STARCH

FOR

Puddings, Custards, Blanc-Mange, Etc.

THE PERFECTION OF QUALITY.

WILL PLEASE YOU EVERY TIME.

Always ask your Grocer for these goods.

HARTSHORN'S SELF-ACTING SHADE ROLLERS

NOTICE SCRIPT NAME OF Stewart Hartshorn ON LABEL, AND GET THE GENUINE HARTSHORN



A HIGH-GRADE PIANO

AT A VERY MODERATE PRICE.

NEW DESIGNS. FANCY WOODS.

Terms Easy. ✣ Monthly Instalments.

TWO, THREE AND FOUR PEDALS.

Catalogues, Prices, Terms, Etc., sent to any address.

EVERY PIANO WARRANTED 5 YEARS.

(Mention this Paper.)

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,

HOWARD STREET, BOSTON, MASS.

GOLD MEDAL, PARIS, 1878.



W. BAKER & CO.'S Breakfast Cocoa

from which the excess of oil has been removed,

Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

"BILLET"

are

Carefully Selected French Sardines, Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS.

BROMO SODA.

Useful in Nervous Headache, Sleeplessness, Excessive Study, Over Brainwork, Nervous Debility, Mania, Etc.

DOSE—A heaping teaspoonful in half a glass of water, to be repeated once after an interval of thirty minutes, if necessary. Each teaspoonful contains 30 grs. BROMIDE SODIUM and 1 gr. CAFFEIN,



SUPPLIED BY ALL DRUGGISTS

Ask for (Bromo-Soda, Warner & Co.) and take no other "Bromo."

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.

MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.

STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

LEA & PERRINS' SAUCE



In consequence of Imitations of LEA & PERRINS' SAUCE, which are calculated to deceive the public, LEA & PERRINS beg to draw attention to the fact that each bottle of the Original and Genuine

WORCESTERSHIRE SAUCE

bears their Signature thus—

Lea & Perrins

For Sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS, NEW YORK.

RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,
184 Greenwich St., N. Y.

BLAIR'S PILLS.



Great English Remedy for GOUT, RHEUMATISM and KIDNEY COMPLAINTS.

SURE, PROMPT and EFFECTIVE.

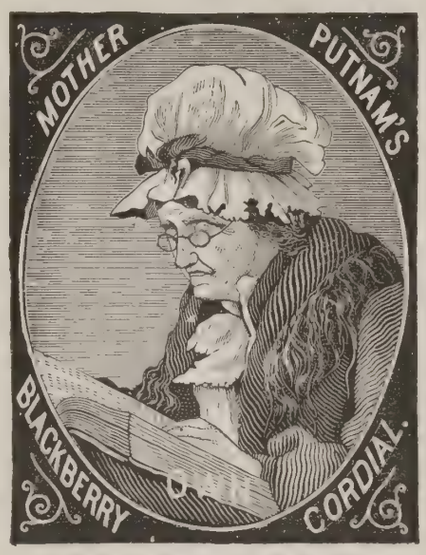
Large Box, 34; Small, 14 Pills.

At all Druggists, and

224 WILLIAM STREET, NEW YORK.

RIDGE'S FOOD

The MOST RELIABLE FOOD
For Infants & Invalids.
Not a medicine, but a specially prepared *Food*, adapted to the weakest stomach. 4 sizes cans. Pamphlet free. *Woolrich & Co.* (on every label). *Palmer, Mass.*



C-U-R-E-S

DIARRHŒA, DYSENTERY,

MALARIA,

all ailments of the bowels. Is an anti-dyspeptic, and a **DELICIOUS INVIGORATIVE.** Leading Physicians prescribe it for **ADULTS AND CHILDREN.** *FOR SALE* by Druggists and dealers.

RHEINSTROM BROS., DISTILLERS OF FINE LIQUEURS,
54, 56, 58, 60, 62 E. 3rd STREET, CINCINNATI, O.

ESTABLISHED IN LONDON, 1851.

DEAN'S PATENT Ardenter Mustard



W. G. DEAN & SON,
361 & 363 WASHINGTON STREET; 84, 86, & 88 NORTH MOORE STREET, N.Y.

NATURAL MINERAL PURGATIVE WATER.

From the Springs of

VILLACABRAS.

Prescribed by the Highest Medical Authorities.

Stronger effects than any other under smaller volume. No smell—no repulsive taste—no after-constipation—no gripes. As a daily laxative it can be taken either pure or mixed with milk, tea or broth.

Sold by all Good Druggists.

Pure LAGER BEER,

"IMPERIAL" and "CULMBACHER"

Brewed & Bottled SPECIALLY FOR HOTELS, CLUBS AND PRIVATE FAMILIES

BY

Beadleston & Woerz
291 W. 10th St. New York.

Orders by Postal Card promptly attended to.

Don't kick



because your business is bad, but advertise If you don't know how to, write to us and we will tell you.

We will prepare your advertisement or give you advice and assistance to aid you in preparing it yourself. We will have the advertisement set in type and procure illustrations if any are needed. When a satisfactory advertisement has been produced we will furnish proofs and an electrotyped pattern to be used in duplicating the advertisement if the display or illustration make an electrotype desirable.

Address GEO. P. ROWELL & CO.,
Newspaper Advertising Bureau,
10 Spruce St., N. Y.

DR. PRICE'S CREAM Baking Powder

Most Perfect Made

A Pure Cream of Tartar Powder—
Superior to every other known.
Used in Millions of Homes—40 Years the Standard.
Delicious Cake and Pastry, Light Flaky Biscuit, Griddle Cakes
Palatable and Wholesome.
No other baking powder does such work.

THE GREAT AMERICAN TEA COMPANY

LADIES

GET UP ORDERS.
Entire New Departure.
A HANDSOME PRESENT TO EVERY SUBSCRIBER.

THE GREATEST INDUCEMENTS EVER KNOWN TO INTRODUCE OUR NEW GOODS.

If you enjoy a cup of **Delicious Tea** send in your orders. 3½ lbs. Fine Tea by mail on receipt of $2 and this "ad". Beautiful premiums given away with $5 orders and upwards. The **most extraordinary bargains** ever offered, during the next thirty days. China Tea Sets and Lamps with $10, $15 and $20 orders to introduce our excellent **New Crop Teas.** Formosa and Amoy, Oolong, Congou, English Breakfast, Japan, Imperial, Young Hyson, Gunpowder, Sun Sun Chop and Mixed. Good mixed teas 20c. per lb. Headquarters in United States for Fine Teas. One pound of our tea will go farther than three pounds of trash. Thirty years' national reputation for selling **Pure Goods Only.**

THE GREAT AMERICAN TEA COMPANY,
P. O. BOX 289. 31 and 33 Vesey Street, New York.

Tabasco Pepper Sauce
OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced, by connoisseurs, to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY,
NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

All New Subscriptions sent now will be good until January, 1892.

GLENN'S SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,
C. N. CRITTENTON,
115 FULTON STREET,
NEW YORK.

We shall be glad to supply our readers with any periodical published at club rates.

Send us a postal naming periodical and we will quote you prices.

ANALYST PUBLISHING CO.,
19 Park Place,
New York.

Be progressive and keep abreast of the times. Avoid dyspepsia by using **Lard Compound** and **Cottolene,** a substitute for lard.

The highest medical authorities pronounce them healthful; and expert cooks commend them.

Our **Clairette** brand of cotton oil soap is the purest and best laundry soap in the market; as pleasant to the hands as genuine castile.

N. K. FAIRBANK & CO.,
CHICAGO AND ST. LOUIS.



AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 6. NEW YORK, THURSDAY, FEBRUARY 5, 1891. WHOLE No. 206

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - - $1 per year.
Single Copies, - - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.

Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.

Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,

H. LASSING, M. D., } *Editors.*
T. P. McELRATH,

No. 19 Park Place, . . . New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

Ambergris ... 63
Contemporary Ghosts ... 63
Dinner Talk ... 62
Domestic Dietetics ... 65
Editorials ... 61
Hygiene Under a New Name; Pan-America at Chicago; Cheaper Quinine; Adulterated Wine.
Fire ... 65
Hay Market Official Bulletin ... 68
Latin in Modern Science ... 64
Smokeless Battles ... 64
Women's Wages ... 65

HYGIENE UNDER A NEW NAME.

The approaching International Congress of Hygiene and Demography, which will be held in London, is the subject of a document just issued under the signatures of the Duke of Westminster and the Presidents of half-a-dozen of the leading scientific bodies of England. The last of these congresses was held in Vienna, and five of them had previously been held in other European capitals. At the Vienna Congress there were 2,000 members, and nearly all civilized countries were represented in it. The Prince of Wales will be the President of the London Congress, and a large number of European universities, scientific societies, and other public bodies have appointed delegates to it. The object of the Congress, which will be in session from the 10th to the 15th of August next, is to promote the interchange of knowledge between those persons in different countries interested in the study of hygiene and demography. The Duke of Westminster gives six branches of inquiry; (1) The means of preventing communicable diseases; (2) the science of bacteriology in relation thereto; (3) industrial questions from a health point of view; (4) the hygiene of childhood; (5) the hygiene of houses and towns; (6) State hygiene, or the duty of the Government towards the nation in regard to health and the machinery necessary for exercising that duty. "Demography" is a word of modern coinage intended to represent and include such themes as are here indicated. The London *Times* speaks of this Congress, and says it is likely to be useful, because some of the delegates to it will be sent by Governments possessing power to carry into effect any reforms of the necessity of which their representatives may become convinced. Delegates will be sent to it from the United States by various scientific, collegiate, and other corporate bodies.

PAN-AMERICA AT CHICAGO.

A government expedition to South America in behalf of the World's Fair is on the point of starting. Ten officers, four from the army and six from the navy, who are going as commissioners, have been attending for the last few weeks a sort of primary class in the Smithsonian Institution, in Washington. As their duty is to collect material of every possible description for the Exposition, it was necessary that they should have a rudimentary acquaintance with certain arts not ordinarily taught at West Point or Annapolis. It is designed to secure a great Pan-American Exhibition at the Chicago Fair, that shall be in its nature two-fold commercial and historical. It will illustrate the progress of civilization in the republics of South America, Central America, and Mexico, by showing the condition of those countries at the time of their discovery by the Europeans, and by tracing their development since that period. Pictures are to be given by means of lay figures, costumes, houses and industries represented of those peoples which are least civilized at present, because they will afford the best glimpse obtainable of the life on the continent centuries ago. Also, the amplest showing is to be given the resources and industries of these regions now, and incidentally are to be displayed all things which our neighbors towards the south produce and have to sell. The Commissioners will carry letters from the Department of State at Washington to the respective Governments, the work being so divided that one officer attends to Peru and Bolivia, another to Chili, and so on. It is hoped that many of the republics will be disposed to put up their own exhibition buildings, for which space is to be reserved. For such of them as are not so inclined all the room they want is to be provided at Chicago in a structure to be erected for the purpose at Uncle Sam's expense. The delegation will communicate with museums, scientific societies, and botanical gardens with a view to securing collections from them. They will advertise, for the benefit of the public, the objects they are working for, and will make some purchases in addition. Congress is expected to appropriate a considerable sum for buying collections, historical and ethnological. Efforts are to be made to secure the attendance at the Exposition of native artisans. From the squeezes secured in papier mache of sculptures and inscriptions, plaster productions are to be turned out at the Smithsonian.

CHEAPER QUININE.

The recent convention of quinine manufacturers held in London and Paris exerted a marked influence upon the market price of that widely-used drug. Formerly quinine sold in this market at $4 and $5 per ounce. This was when the product from which it was manufactured was procurable only in the forests of South America in its wild state. The prominence assumed in the *materia medica* of the civilized world led to experiments in cultivation, with the result that the product was increased many fold. Prices, in consequence, sensibly decreased, and the manufactured article was brought within reach of the consumers at a greatly reduced rate. This diminution in price was further accentuated by the removal of duties by the revision of the tariff several years since. Some New York manufacturers have, we understand, taken up the task of reducing the cost of quinine to the minimum. The drug can now be bought in limited quantities at what has heretofore been wholesale rates; that is to say, instead of being obliged to pay one per cent. or more per grain, the purchaser of quinine can now procure an ounce, or 480 grains, Troy weight, of the manufactured product of guaranteed quality at from 25 to 30 cents, according to the character of the package in which it is put upon the market. In view of the wide extent to which quinine is employed, this concession is a boon to the purchasing public of inestimable value.

ADULTERATED WINE.

It may interest the public to know that the New York statute prohibiting the manufacture and sale of adulterated wine defines pure wine as the fermented juice of undried grapes, or other undried fruits; provided, however, that the addition of pure sugar to perfect the wine, or the addition of pure distilled spirits to preserve it, not to exceed eight per centum of its volume, or the using of the necessary things to clarify and fine the wine, which are not injurious to health, shall not be construed as adulterations, but such pure wine shall contain at least 75 per centum of pure grape or other undried fruit juice. Manufacturing for sale or selling impure and adulterated wine is made a misdemeanor, punishable by a fine of $200 to $1,000, or by imprisonment from six months to a year, or both. The offender is also liable to a penalty of one dollar for each gallon manufactured, sold, or offered for sale, and the wine is declared a public nuisance and forfeited to the State. Any wine containing between 50 and 75 per cent. of pure grape or other undried fruit juice, and being otherwise pure, is to be known as "half wine,"

COLGATE'S COLEO.



A PURE PETROLEUM PRODUCT FOR TOILET AND MEDICINAL USE.

and the words "half wine" must be branded on every package. Wine containing less than 50 per cent. of pure grape or other undried fruit juice, and otherwise pure, is to be known as "made wine" and so labeled. To sell any "half wine" or "made wine" without the proper label or brand, is a misdemeanor, punishable by a fine of $200 to $1,000, or imprisonment from three months to a year, or both. The provisions of the act do not apply to medicated wines, such as are put up and sold for medicinal purposes only.

DINNER TALK.

WHAT SHOULD BE EXPECTED OF DINNER PARTY GUESTS.

A dinner can have but one object, the entertainment of all present; but it is at once a necessity and a pleasure, and the time devoted to it is profitable to man physically and mentally. It is the dividing line between the day of work and worry and strife and the evening of ease and quiet and friendly intercourse. It is a time of relaxation, when the past is forgotten and the future ignored. The present is sufficient; no thought is taken for to-morrow; let it come with its attack of indigestion and feeling of general destruction, but let it come unheralded. For this reason one should come equal, physically, to the feast. If you come unequal to the exertion the dinner will be ruined for you as well as for the others. There is a little French vaudeville which illustrates this idea. In the play are two women, rivals. One issues an invitation for a dinner in honor of a small social victory, the other is compelled to conceal her chagrin and accept the invitation; in doing so she sees her revenge. "Yes, I'll go," she says, "but I'll ruin her dinner." *Je me trouverai mal au dessert.* If you are at all ill you had best stop at home and deny yourself the pleasure of ruining your host's dinner. By the pleasure of accepting the invitation you do not stipulate to eat all with which you are served; common sense rules all things. Probably you remember Dr. Johnson's way of disposing of an indisposable hot morsel. He ejected it from his mouth, saying to his hostess, "Madam, a fool would have swallowed that." The clever remark and the common sense was no excuse for the vulgarity; the example is not one to be followed with hot morsels, nor with disliked ones. Whatever is served of the course on a plate accept; eat of it if you like. The dishes that are passed you can decline. You do not offend in displaying a choice; no wisdom is worse than that which dictates the trying to eat of that which does not agree with you. Sending away an empty plate is no longer required as an evidence of one's good table manners, but the heaping of a plate is undoubted evidence of the want of them. Equal with the fallacy that all men can eat the same thing is the fallacy that all men can talk the same thing. A one subject dinner at which men and women meet is an absurdity. A dinner with one subject for conversation might be paralleled with a dinner with one article of food. People have been dining since the world began in just one way, and that way is going to continue; it is each man for himself. Fashion will introduce innovations, but they will only be seized by the Athenian element, *i. e.*, those who are continually running about to find or hear some new thing. A Browning dinner presupposes an equal love, admiration, and knowledge of the difficult poet and his difficult verse. If every one present holds the same opinion there is no use in discussing the subject at all; it is finished before it is begun. If you invite people who dislike your favorite poet you can no longer talk him, you must argue and convert. The advice given by the father of Contarini Fleming to his son, in Disraeli's book of that name, is: "Never argue. In society nothing must be discussed. If any one differ from you bow and turn the conversation—or you may say many disagreeable things." The seriousness of a debate cannot assimilate with the pleasantry and high-art cookery of a dinner. The person who has adaptibility, quickness, and discretion can talk easily, well, and interestingly, and yet have neither depth nor book knowledge; the lack of both is not betrayed in general conversation. Ignorance is never to be commended, but it becomes attractive if one adds to his natural abilities the power of listening. A man or woman possessing such traits, such a power, and a sunny disposition, is to be envied, and invited as a valuable assistant at all successful dinners. The one-subject idea is limited to the public banquet for men; even then the subject is one for speeches and not for conversation. We have not all had the questionable pleasure of a dinner with Browning for a subject, but of the idea most of us have had examples. We can all testify to the exasperating detail and deadly tediousness of a meal that has been all children, or servants, or dog, or horse, or reform, or scandal, or all anything else. One person can hold the attention of many by the relation of anecdotes, personal adventures, or reminiscences of public events, but even then to the subject must be added a pleasant voice and manner and a certain amount of personal magnetism. A dinner can be made only one of a kind by the inanimate and still-life present. It can be made one of a color, the shades for the lights and other accessories being of one tint, or of one flower, when only one variety is used in decorating—and this should always be the case—or character can be given, as in a hunt dinner, by employing certain devices in decorations for the table, and the cards to be kept "in memory of" illustrating scenes from the "view to the death in the morning," or the serving of one species of food, as a game or fish dinner. A dinner dance is an idea imported from England and improved on here. It ranks with many of the good things that are amusing and fascinating because they are bad. It is directly opposed to all accepted hygienic rules. "After dinner, rest a while." The repose under the table, of which in the good old days that are gone we hear so often, when men drank hard and deep, seems much more in the order of things. The dance after a dinner is often a punishment of pleasure. The dinner dance is only a reception with several hostesses instead of one and the eating preceding instead of following. It has brought about one change. If one must dance one must have dancing legs, consequently young people must replace their elders at the festive board, and they naturally welcome the change with delight. To be invited to dinners is an advance to a certain grade of social distinction and recognition for which débutantes hope and to which they look forward. A dinner has become much more an affair of amusement than it formerly was. No longer do the "buds" add to their litany, "From a dinner deliver us." They want to be asked to dinners; the invitation implies a selection. They feel they are recognized as women with minds. Most older people like this leavening of youth. They no longer wish to be left on the shelf of reverence; they want to reach back and assimilate themselves with youth and to be youthful. One happy change the dinner dance has brought about—the meal can no longer drag itself wearily along by the hour; it must stop some time; it must have a reasonable limit. There is one thing that has gone out of vogue that might easily be restored to the private dinner party—that is the toast. It does not necessitate increased drinking nor make excuse for it; it is more a cause for scintillating wit, sparkling like the wine in which it is drank. It is a chance for the brilliant and ever-ready; the clever speaker is applauded and rewarded with smiles and laughter. The brevity of a toast is its first recommendation. This advice of a member of Congress should be followed: A man rose and began his toast by saying "I do not know what to speak about." "Speak about a quarter of a minute and sit down," was the member's friendly advice. As the toast can be easily restored without any undue and boisterous hilarity the after-dinner story might easily be suppressed or abreviated. It is more of an excuse for the heavy drinker than an occasion for the *raconteur*, although the women who sit in the glory of a great drawing room and listen to the shouts of ringing laughter, cannot doubt the repeating of clever stories. These, however, might just as well be reserved for the club. It is not that the women are pining and miserable in the drawing-room, though many may be knowing the ways of their lords—they get through the time admiring each other's fine gowns and exchanging details of every-day life. There are some women who do not mind remaining with the men while they smoke, and listening to stories a little bit "French," but it would be more to their credit if they did mind. The story-telling is just one of the things in this world that had best be left undone. A five minute's smoke may be lengthened to a quarter of an hour, but that is time sufficient. The men should then be ready to join the women in the drawing-room for coffee. Where coffee should be served after dinner is a matter of choice. If served in the drawing-room it allows a display of pretty china and silver, and a graceful woman has no better chance for showing her grace than when pouring coffee or tea. It is an easy excuse for sending for the men and thus ending their story-telling. The privilege of being entertaining at a dinner is equal to men and women. A woman naturally has not the fame as a diner-out that a man has, her duties at home and at her own table often preventing the acceptance of an invitation. One only gains such a reputation by being seen wherever "two or three are gathered together." A woman instinctively and sympathetically takes her cue from the surroundings. She who is envied as one who "gets on so nicely" recognizes the fact that all the world loves to talk and that each individual has a favorite topic. If a woman is to be pleasing to a man she must be an intelligent and appreciative and suggestive listener. She must be intuitive enough to find his subject, and, when found, unselfish enough to listen. All men love to talk on their own subjects. A woman's charm is in her power to please; to please she must be unselfish; in proportion to her unselfishness and intuitiveness is she charming. In this she leads when apparently following. She can be brilliant with delicacy and talk at our American table without running the risk of being snubbed, as one of our women was at an English table. She illustrated Carmen Sylvia's thought: "You can only be witty when those around you are witty too. The cock crows in vain to the ducks; they do not understand him." Surrounded by men of talent who talked well, she talked well herself. Thoroughly engrossed, she did not observe that the other women at the table talked little. After dinner the adoring wife of a literary gun voluntarily enlightened her on the ways that were strange, telling her it was thought "very bad form for women to talk much at table." If the

English idea is not to be followed the Germans can furnish a pretty one that can be followed; it relates, too, to a subject that puzzles many—the asking of grace. It is never out of place at the beginning of a dinner, but it is often omitted. This pretty habit all who have traveled in Germany and observed will remember; it is practiced even at the table d'hote of the hotel. It is a variety of blessing that follows instead of preceding the meal; each guest, on rising from his or her chair, turns first to the right, then to the left, and, bowing to each neighbor, repeats these words: "Gesegnete Mahlzeit;" an easy translation of which is, "Blessed be this meal."

AMBERGRIS.

WHAT IT IS AND WHAT IT HAS BEEN SUPPOSED TO BE.

A collection of facts and opinions from various scientific sources in regard to ambergris may prove interesting, if not instructive, as most of us, unless having access to an extensive perfumery department, know very little about it; being but rarely used in medicine, indeed many have never seen it. The substance derives its name from the French *ambre gris*, *i. e.*, gray amber. Amber is taken from the Arabic *anbar*, *qnbarum*, a kind of perfume, but originally the name of a fish from which it was believed that ambergris came. This leads us at once to consider its origin.

Many ridiculous hypotheses were started from time to time to account for its origin. Among others it was conjectured to be the solidified foam of the sea; fungoid growths in the ocean similar to fungi which form on trees; excreta of sea-birds. Some supposed it to be a vegetable production of the same nature as yellow amber. In the sixth voyage of Sinbad the Sailor, he says: "Instead of taking my way to the Persian Gulf, I traveled once through several provinces of Persia and the Indies, . . . and embarked." Shortly afterwards they were wrecked, and describing the place, Sinbad says: "Here is also a fountain of pitch and bitumen, that runs into the sea, *which the fishes swallow and vomit it up again, turned into ambergris.*" That the gray and not the yellow amber was meant is proved further on by the statement that he gathered many precious stones and ambergris to take away with him, showing the value even in those days. It may seem childish to refer to such fables, but we should remember that these stories embodied the belief of the Moslem people five or six centuries ago. It is a great pity that Shakespeare, who touches upon almost every subject on earth, should have omitted to give us his views on ambergris, as it would have been the expression of popular contemporary opinion. He mentions amber frequently, but refers to the yellow. According to Webster the word "amber" is occasionally used as synonym for "ambergris," and in such we find it employed in an old play about the middle of the seventeenth century, written by Beaumont and Fletcher—

"You that smell of amber at my charge," etc.

The true source was satisfactorily established by Dr. Swediaur in a communication to the Royal Society. It was found by him that ambergris very frequently contained the horny mandibles or beaks of the squid (*Sepia moschata*) on which the sperm whale is known to feed. That, observed in connection with the fact of ambergris being taken from the intestines of the whale, sufficiently proved it was formed inside and not extraneously. Ambergris is now regarded as a morbid secretion, probably derived from the bile, and is by some thought to be the cause, rather than the effect, of the sickly condition of the whale. Capt. Buckland, Hamburg, and G. W. Septimius Piesse uphold the theory that the substance is nothing more nor less than the fæces of the sperm whale under certain condition and food probably stoppage, which might account for the ambergris found floating in pieces of various sizes on the coast of different countries, particularly in the southern hemisphere. The *Physter macrocephalus* (Linnæus) or Great-headed Cachalot, belonging to the class Mammalia, order Cetacea, is principally met with in the Pacific and Indian Oceans and the seas of Australia. It is fifty to seventy feet long, with a head fully one-third of its entire length and correspondingly thick. The jaws are supplied with twenty-five long tusks, each weighing as much as two pounds and being eight inches in length. Thumberg, in his history of Japan, vol. ii., p. 48, tells of a very good piece of fine ambergris, found upon the coast of Kijnoknur, which weighed about 100 cattis Japanese, or about 130 pounds Dutch weight; and being much too large to be purchased by one person, it was divided into four parts, in form of a cross, and one of the parts was tendered him. In 1693 a piece of ambergris weighing 185 pounds was sold by the King of Tidore to the Dutch East India Company for £2,000. It was bought on the condition of its being the genuine article. It was sent the following year to Amsterdam, and was kept in the company's museum, where it was seen and described by several Dutch writers. An American fisherman from Antigua found inside a whale, about fifty-two leagues southeast from the Windward Islands, a piece of about 130 pounds, and sold it for £500. One whale has been known to yield 750 pounds of this product. Ambergris, according to Stille and Maisch, comes in irregular pieces, varying considerably in size; is opaque, of a gray or gray-brown color, with lighter and darker colored streaks and spots; lighter than water; friable in the cold, but softening when held in the hand. It is of a waxy appearance, fusible in hot water, mixing with melted fats, and soluble in volatile oils, ether and hot alcohol. It is incapable of forming soaps with alkalies. It has a peculiar fragrance and is nearly tasteless. When freshly taken it is of soft consistence and of disagreeable odor, but gradually hardens and becomes paler. It consists mainly (about 85 per cent.) of a fatty substance resembling cholesterin, which Pelletier and Caventou have named ambrein. The remaining constituents, according to John (1818), are some balsamic matter, chloride sodium, benzoic acid (which is called into question by the Nat. Disp.), and coloring matter. Some of the adulterations are benzoin, laudanum, meal, etc., scented with musk; it is, however, very difficult to counterfeit ambergris, as the spurious article is easily detected by its physical properties. Formerly ambergris entered into many officinal preparations, and is still retained in some European pharmacopœias. The French Codex directs 10 parts to be macerated with 100 parts of 80 per cent. alcohol. Stanislas Martin suggests that it should be previously finely powdered by trituration with washed sand. In medicine it was used formerly, like other strongly odoriferous animal products, to produce stimulant action upon the nervous and circulatory systems, with a special direction to the generative organs. It was used in low fevers and spasmodic disorders, especially of the hysterical sort, and often associated with musk, castor and valerian. It was prescribed in substance in the dose of from 5 to 20 grains, or more frequently in ethereal solution. Dr. Swediaur took 30 grains of it without perceiving any sensible effect. Its present employment is principally in perfumery, to give permanency to very fleeting scents, as it undergoes slow decomposition and possesses very little volatility. Both musk and ambergris cling pertinaciously to woven fabrics even after passing through the lavatory ordeal, and are therefore added to perfumes to make them "last." A tincture for use of perfumers may be made by rubbing up one ounce ambergris in an iron mortar with two ounces of loaf sugar until finely powdered. Put into a tightly closing bottle and add gradually four pints cologne spirits: macerate in a moderately warm place for a month in order to facilitate solution.—*Pharmaceutical Record.*

GAS AND VAPOR.—Faraday's definition that "gas is the vapor of a liquid at a temperature above the boiling point of that liquid" holds good to-day, the lapse of time having shown no necessity for altering it.

CONTEMPORARY GHOSTS.

THE BELIEF IN SUPERNATURAL APPEARANCES NOT YET EXTINCT.

The recent report of the appearance of a ghost in an Irish city may have served to remind some readers of Scott's assertion, made more than fifty years ago, that "the increasing civilization of all well-constituted countries has blotted out the belief in apparitions." It may be that such a belief is more uncommon now than it was a century ago; but even that is doubtful. There are thousands of people in our own country—and Sir Walter would, perhaps, admit that it is fairly "well-constituted"—who are convinced that disembodied spirits are able to communicate with a certain class of persons who have not yet "shuffled off this mortal coil." There are among us professional mediums who undertake, for a moderate consideration, to put inquiries in correspondence, not only with departed relatives, but also with the most illustrious of the dead whose names survive in history. In this respect, indeed, there has been a change, or an advance in the conditions requisite to the observation of these very strange occurrences. Witches, wizards, necromancers, sibyls and soothsayers have never been absent from the world; but their number was never so great in any former age, and never before were their services so generally and easily available. It is to be remarked, however, that belief in the reality of these alleged spiritual manifestations is not confined to those ignorant or half-educated persons whose natural tendency is towards credulity and superstition. Mr. Andrew Lang says: "The believers in a religion based on pretended communications from the dead are numbered in America by millions. (?) Their opponents say that their faith and practice help to fill the lunatic asylums, to which they easily reply that theirs is not the only creed that gives occasion to religious madness. Men of sense and experience are numbered in their ranks, and even in England it would be easy to name persons of eminence in art and literature, and some branches of science, who are puzzled by the phenomena they suppose themselves to have witnessed. Thus the late Augustus de Morgan writes, in the preface of 'From Matter to Spirit,' 'I am perfectly convinced, in a manner which should make belief impossible, that I have seen things called spiritual which cannot be taken by a rational being to be capable of explanation by imposture, coincidence, or mistake.'" From the scientific point of view, the claim of the spiritualists must be admitted, or denied, in the light of evidence. Notwithstanding the number of ghost stories that are current in the world, the great majority of men and women will affirm that they have never seen a spirit or communicated with one in any way. On the other hand, many ghost stories are so respectably fathered that it is hardly logical to dismiss them as absurd upon no better ground than a merely negative experience. There are probably very few persons who are not personally acquainted with some one who believes himself to have been visited by a distant friend at the time of that friend's death. It is not sufficient to ask why such ghostly visits should be paid, or why they are still more frequently paid if there is any good reason for them. What we have to meet is the actual evidence, the affirmative testimony of many credible witnesses. The truth is that no solution has yet been offered which is in all respects perfectly satisfactory; but modern science has proposed one which the average educated mind prefers to the literal acceptance of the apparent truth of this class of narratives. We refer to the physiological theory of subjective illusions. It is a well-known fact that an impression once made upon an organ of sense may be revived or reproduced by the reactive power of the imagination, by the association of ideas, or by the will through those agencies. Thinking of sour grapes, for instance, will set the teeth on edge, and thinking of a savory article of food will "make the mouth water." That is to say, will stimulate the ac-

tion of the salivary glands. Now, when an old impression is thus revived with an intensity equal to that of present sensations, it is possible under some circumstances to overlook the fact that it has been produced by a purely subjective process. This equalization of old impressions with new and present sensations may be effected, says Dr. J. W. Draper, the famous physiologist and chemist, in two ways: "1. By diminishing the force of present sensations, as when we are in a reverie, or have fallen asleep, or by breathing vapors unsuited for the support of respiration. 2. By increasing the activity of those parts of the brain in which the old impressions are stored up." Remembering these facts, it is easy to see how a man who is in a state of reverie, or who is nearly asleep, may confuse in his consciousness an old impression, subjectively revived, with the new sensations which are at the same time produced by actually present objects. A man is in his bedroom at night, in a state of listless reverie. Suddenly he sees before him the form of a father, a brother, or some intimate friend. The door is closed and the windows are down, and he is naturally startled; but before he can speak the image disappears. He looks at his clock, and finds that it is just half-past twelve. A few days later he learns by letter, or otherwise, that his friend died, a thousand miles away, precisely at that hour. Of course he thinks that he has seen a ghost. It is of no use to tell him that he has been the victim of a hallucination; for he was not asleep, and he remembers perfectly well all the attendant circumstances. In reality the form of his friend appeared before him as a revived impression, subjectively induced, but with an intensity, a vividness, equal to that of the objects actually in the room. The whole subject is so obscure that it is very difficult, if not impossible, to suggest any theory which can silence all further questioning. Science cannot establish a negative, and human nature has no interest in discrediting stories that would prove, if their truth were indubitable, the fact of a life beyond the grave.

SMOKELESS BATTLES.

HOW ARMY OPERATIONS WILL BE AFFECTED BY THE NEW POWDER.

In the ensemble of battle and in the practice of following its different phases the smoke of the field has been a useful auxiliary to the commander-in-chief. The clouds and puffs floating over the lines of fire, which he followed from his post of observation—usually an elevated one, where the atmosphere remained clear—certified the troops engaged, revealed to his practised eye an estimate of the adversary's forces, and showed him step by step the fluctuations of the battle. In short, they often told him more than the delayed reports of aides de camp. But powder without smoke is now an established fact. Artillery and infantry open fire, and no smoke is visible! A single shot from the skirmish line is henceforth absolutely imperceptible, and a salvo from the line of infantry at 300 yards only produces a thin blue-white vapor like tobacco smoke, that vanishes almost instantly. In no instance, not even in the firing of heavy ordnance, is the vapor dense enough to indicate even at short firing range the position of artillery or infantry. These facts, and others showing the insidious properties of this new agent in modern warfare, were discussed at length at a recent meeting of a military board in this city, when it was decided that the new powder should be tested officially at Springfield with a view to its introduction into theAmerican Army. Of course powder without smoke cannot become the privilege of the American Army. European nations have taken up the problem, and several of them boast of having a formula of their own. Hence advantages and disadvantages attending its use on the field of battle will be common to both sides. Each acquires a better view of his adversary, but loses the protection that a veil of smoke afforded him. *A priori* one can judge how doubly important becomes the advantage of being the first to see the enemy, unseen by him if possible. In spite of all the precautions which may be taken to discard those details in the uniform that might mark too conspicuously the presence of a troop, surprises—and surprises are common occurrences in war—will be much easier to effect than before. The side that first receives the fire will suffer a serious disadvantage, for some time must elapse before it can ascertain whence comes the attack; and the forces belonging to either side, though not two miles away, may know nothing of the skirmish. Owing to the distance that two armies preserve during the preliminaries of a combat, cavalry is intrusted with the honor of getting information—a perilous trust at best, when it is considered that a mounted troop is not easily kept out of sight, and that the chances are against its being the first to discover a well-intended advance post. Moreover, if it is true that in recent wars the increased improvement of quick-firing arms has diminished the efficiency of the cavalry role, its future charge without the protection of smoke to cover its advance is looked upon as problematic. The results of the new powder in what concerns infantry are doubtful, so much depends on the quality of the troops. As long as he is ambushed the infantry soldier will be a myth; firing at 600 yards, his shots will neither be seen nor heard, only felt. But, it is stated by army officers, his role is not to remain stationery. He must advance and show himself. No longer protected by a cloud of smoke, he will have to face a fusillade tenfold more appalling than Antietam or Gettysburg. Then? Artillery, say the veterans, gains everything by operating in a clear field. Before it worked blindfolded; the enemy's smoke served as aim, and it was often deceptive. Now the exact position of the opposed artillery will be visible. With even chances, when once a battery has attained precision in its aim, which before could but imperfectly be determined on account of smoke, it will serve as a guide to neighboring batteries, and thus the fire will be concentrated and more effective. So that the artillery, if not the infantry and cavalry, would seem to be the gainer by the great martial transition from much smoke to no smoke at all.

LATIN IN MODERN SCIENCE.

IMPORTANCE OF ITS STUDY FOR PROFESSIONAL MEN.

The past twenty-five years have seen great changes in systems of higher education. Where formerly colleges and universities furnished only Latin, Greek, and the higher mathematics, now they set forth a bewildering variety of scientific and philosophical courses. One cause for the change lies in the varied practical applications of science which have greatly increased men's comforts or furthered their business interests. Improved machinery, new uses for electricity, and the many economies which chemistry has taught to manufacturers—all these are now recognized in college work as special departments and requiring special study. Then, too, scientific investigations have made such permanent changes in the field of thought other than the directly practical ones, that educated people cannot afford to be ignorant of them. Witness the doctrine of evolution, how it has entered into art, morals and philosophy, not to mention biology, psychology or sociology. But there is still another reason for the distrust felt for an exclusively classical education for nineteenth century boys and girls. It is strongly suspected that four years devoted to Latin and Greek have a tendency to develop rote memory at the expense of the judgment. To live much among dictionaries is apt to engender too great deference to authority to other peoples' opinions. To hear again and again that there is no reason for this conformity, or that irregularity in speech, is to have the usual thirst for causes quenched but left unsatisfied. We ought not to be contented to stamp our opinions with a passive "ipse dixit." But there is not time for ordinary students to make independent researches in language. We must accept what scholars offer us as the result of their delving. Would we develop our powers of judgment—of sifting evidence—we must turn to the natural and physical sciences. Here are vast collections of facts which we can verify by our own observations and experiments. We can learn to group them under laws, by extensive comparison—to distinguish the constant from the accidental, the false from the true. Such study will better prepare us for the complex problems of our daily lives than would the study of Homer or Virgil in the original. But in this reaction against the classics, as in all reactions, there is danger that the pendulum will swing too far the other way. We grant the necessity for scientific training, both for its use as knowledge and its value as mental discipline; but we believe that the study of Latin is as real a necessity for professional men. The scientist cannot afford to be ignorant of this tongue. His technical terms, the tools of his thought, are made of Latin roots, prefixes and suffixes. His staggering botanical names, his geological and zoological ones as well, and terms of his chemistry, physics, and astronomy, spring mainly from the language in which Virgil sung and Cicero spoke. No more can the physician dispense with Latin. The difficulties of his highly technical and elaborate phraseology, which almost constitute a language by itself, are greatly lessened by a thorough comprehension of its Latin foundation. Lawyers, too, and other public speakers should have some acquaintance with this ancient tongue, not only of certain legal phrases which retain their original Roman form, but because of the increased vitality their English vocabulary would possess. Words are pre-eminently the tools of these professional men. Our Latin derivations are so numerous that a knowledge of their ideas greatly furthers their skilful use. This should be kept very prominently before all Latin students. No opportunity should be lost for tracing the root meaning of English words which have a Latin source. One book of Virgil, studied with this end in view, would yield more of lasting practical benefit to the average student than the whole twenty regarded merely as so much literature to be translated, or, worse yet, as only Latin "lessons." Let the derivation of "crucial"—from "crux," a cross—be instantly recalled when the word is mentioned, and how much more vivid to the imagination is a "crucial test!" The significance of an "impediment" is seen when we remember that literally it means "to go against the feet." Bits of interesting history too are bound up in words, as in "pecuniary," whose source, "pecunia," tells us that in early Roman times a man's cattle were his money. "Subjugate" recalls an ancient custom of the Romans who forced their conquered enemies—"sub jugum agere"—to pass under the yoke. Thus might example after example be cited, all illustrating the same idea, that a wisely pursued course in Latin gives flexibility and precision to one's English vocabulary. So closely are medicine and pharmacy united that if the doctor needs to understand Latin, the pharmacist does also. It will enable him much more easily to grasp and retain the terminology of his profession. True, he does not need to study the authors commonly prescribed in Latin courses; they are for the literary men, for they deal with literary subjects. He does not need to know how Cæsar conquered the Germans, or dealt with traitorous allies. Neither need he follow Cicero's reiterated denunciation of Catiline. The Latin for him should be an elementary work whose practical exercises illustrate the principles of Latin grammar in Latin words which refer to drugs, their preparation and their prescription. Instead of rendering into Latin "Virtue is better than gold," he should translate "Quassia is more bitter than gentian." It will be more profitable for him to reflect upon "Medicus malariam quinina, cinchona, et aliis potentissimis remediis pugnat," than upon "Cæsar per exploratores certior factus est, tres jam partes Helvetios id flumen transduxisse."—*Western Druggist.*

FIRE.

SOME CHEMICAL CONSIDERATIONS OF COMBUSTION.

What is fire? We fancy that few persons could answer this question offhand, although the phenomenon of combustion is perfectly familiar to every one. The ancients considered fire to be one of the primitive elements, like the earth, air and water—all of which last we now know to be compound and not elementary substances—and this idea of an elementary fiery principle survived under the names of phlogiston, caloric, etc., down to the time of Lavoisier, and was not entirely overthrown until after the beginning of the present century. We have, in the preceding, spoken of fire as a phenomenon, and that is exactly what it is. Fire is not a substance; it is not even an immaterial force, like light or heat; but, as generally understood, is simply the sensible phenomena of light and heat resulting from an intense chemical reaction—generally, but not always, a process of oxidation. We may dissolve a piece of zinc in sulphuric acid, by itself, or do the same when it forms a pole of a galvanic battery; or we may heat it until it bursts into flame. In all these cases the process is a similar one,—that of oxidation,—but fire accompanies the process only in the last. There the oxidation takes place so rapidly that the heat set free is not only sufficient to be detected by our nerves of sensation, but the resulting particles of zinc oxide are heated to such a degree that they become luminous. So, if finely divided metallic iron is exposed to the air it gradually absorbs oxygen and is converted into rust. But if the same iron is ignited with a match it takes fire, becomes luminous, smoulders away like a glowing coal, and is soon converted into a similar oxide, or rust. Just as much heat is set free in one case as in the other, the only difference being in the rapidity of its development, which determines whether or not it shall become evident to our senses. When hydrogen and oxygen are burned together, as in the oxyhydrogen blow-pipe, the resulting flame, although one of the hottest known to us, is almost invisible, and to the eye alone there is no appearance of fire; but introduce a piece of metal or a lump of lime, or other refractory substance, and the brilliant luminous phenomena at once indicate the intensity of the chemical combination which is taking place. Fire is not always dependent upon a process of oxidation. A mixture of iron filings and flowers of sulphur is readily ignited, forming ferrous sulphide; and sodium, potassium, copper, and some other metals readily burn in the vapor of boiling sulphur, giving rise to the same igneous manifestations as when they combine with oxygen. Nitrous oxide, or laughing-gas (N_2O), also supports combustion, although the reaction is one of true oxidation, the same as with pure oxygen or air. A very important distinction must be drawn between fire and flame; the latter is merely an incidental manifestation of the former. Burning charcoal simply glows and wastes away; there are no combustible gases formed, and the chemical reaction takes place only on the surface of the coals. With wood, oil, wax, tallow, etc., the heat produced by the oxidation sets free from the unconsumed portion a large quantity of hydrocarbon gases, which take fire and burn at a distance from the original burning body, exactly as the gas which we burn in our houses is driven off by heating the coal at the distant gas-works. If we burn a piece of magnesium, flame is apparently present, but it is only the incandescent particles of oxide as they fly off into the air at white heat. A similar artificial flame may be made from charcoal itself by finely pulverizing it, throwing the dust into the air, and igniting it. Serious explosions have occurred by dust igniting in this manner, but such phenomena are not, strictly speaking, true flames, which are only produced by the combustion of gases. A word should be said in reference to electric lights, which are simply masses of carbon heated to an excessively high temperature. There is no true fire or oxidation about them, but a transformation of electrical energy into heat and light. There is an oxidizing process at the foundation, however, and the heat of the oxidizing carbon in the furnaces under the steam boilers which furnish the power to drive the dynamo machines, is just as truly transferred through the wires to the distant electric lights as the water from the pond or stream is transferred through the pipes to the dwellings of the city. In one case it is the transference of energy, in the other that of matter. The knowledge of fire is a distinctive attribute of mankind. No ape, however intelligent, has been found but what regards it with terror, and no race of men—with, perhaps, one or two doubtful exceptions—but what enjoys its numerous benefits. It is hard to say how it was first brought to the knowledge of mankind. The Greeks considered it a direct gift from the gods; but, disregarding that belief, the lightning-stroke, the volcano, an accidental spark, from the striking of a stone, falling upon dry leaves, or even, as has been suggested, by a drop of gum exuding from a tree acting as a natural burning glass,—any or all of these causes may have introduced this useful but dangerous servant to mankind. Once discovered, the knowledge seems to have been carefully preserved, and the art of producing fire has advanced through the fire-sticks and drills of the savage to the flint and steel, and friction matches of later times, until in this modern age of electricity a touch of the finger is sufficient to produce an electric spark which will instantly ignite the fires and gas-lights of the largest building, or, if desired, those of an entire city.—*Pop. Science News.*

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

February.

MEAT.—Beef, mutton, ham, kidneys, liver, venison, sausage, pork.

GAME AND POULTRY.—Grouse, hare, pigeon, chicken, duck, turkey, geese.

FISH.—Bass, cod, crabs, eels, carp, catfish, flounders, halibut, herring, lobsters, mackerel, mussels, oysters, perch, pike, rock-fish, salmon, smelt, white-fish.

VEGETABLES.—Artichokes, beets, beans, cabbage, carrots, celery, garlic, lettuce, onions, parsley, parsnips, potatoes, shallots, spinach, tomatoes, turnips.

FRUITS.—Apples, bananas, grapes and oranges.

PRACTICAL RECIPES.

BISQUE OF CLAMS.—Take one dozen large hard shell clams and scald them in their own juice, then chop them up fine. Heat to the boiling point a quart of beef stock and cook in it half a cupful of rice, a bouquet of soup herbs, some pepper and salt. When the rice is thoroughly done add the clams with about half the juice and half a cupful of hot cream. Strain and serve with snippets of toast.

MISS I.'S SCOLLOPED LOBSTER.—Chop the meat of one large boiled lobster. Place in a baking dish, with bread crumbs, in layers, seasoning each layer with salt, pepper and plenty of butter. Add hot water a little at a time until the whole is thoroughly moistened. Sprinkle bread crumbs and bits of butter on top. Bake half an hour in a slow oven.

TOMATO PATTIES.—Line some patty-pans with puff-paste. Scald some fine tomatoes and remove the skins; cut them in halves, put a half in each pan; sprinkle on each some salt, pepper, a little sugar and bits of butter. Cover with paste and bake to a rich brown, then serve at once.

DOUGHNUTS.—One cupful sour cream, one cupful sugar, three eggs, one teaspoonful soda, two teaspoonfuls nutmeg, enough flour to roll out. Fry in boiling fat.

APPLE CAKE.—Make a layer cake as follows: one large tablespoonful butter, one and a half cupful sugar, three eggs, one cupful milk, three tablespoonfuls baking powder, sufficient flour to make a not too thick batter; flavor with grated nutmeg. Bake in four layers.

FILLING.—Grate the rind of half a large fresh lemon and half an orange; add the juice of each (half the lemon and half the orange); grate three large tart apples with the lemon and orange and add to it a well beaten egg. Boil for five minutes, sweeten to taste, and put between the layers of cake.

CANDIED GINGER.—Put two pounds granulated sugar and two cupfuls water over it to boil in a porcelain-lined kettle. Do not stir it, but when a scum rises skim it off; when it is a thick syrup set it aside. Cut into small pieces half a pound of ginger and let it boil in water for an hour, then pour off the water and pour on the ginger enough of the syrup to cover it, and boil for an hour and a half, adding more syrup as it boils away, until the ginger is very tender, then drain it on a sieve, and, when cool, dust it with granulated sugar, then dip it again in the syrup, and, when cool, dust again with sugar.

BERTHA'S CLAM FRITTERS.—Drain the broth from the clams, and then to a cupful of this add the same amount of milk, three eggs, a little salt and pepper, and flour enough for a thin batter. Chop the clams fine, and add last of all. Fry in hot lard.

WOMEN'S WAGES.

A WOMAN SEEKING COMPENSATION FOR SERVICES IN THE WAR.

Dr. Mary Walker has been seriously ill, but at latest advices seems likely to recover. It is to be hoped that her enfeebled condition may plead more powerfully with Congress for the passage of a bill indemnifying her for her services as assistant surgeon during the war than her active efforts have been able to do. Dr. Walker was assistant surgeon in the hospital to which the Patent Office was converted and worked without pay, performing the same duties as the male physicians. She was not regularly in the service until a year before the war closed. Distinguished generals and statesmen at that time complimented the ability which has been lost sight of in the derision to which her peculiar style of dress has subjected her, yet there is no doubt not only her surgeon's skill but her womanly tenderness are enshrined in the heart of many who wore the blue. Some years ago the writer was in conversation with Judge Wesley Tucker, of Nebraska, and Dr. Walker's name was mentioned. The big hearted old soldier fired up with enthusiasm at once and said he would knock any man down who spoke disparagingly of Dr. Mary Walker in his presence. He then described the battle of Peach Tree Creek and how Dr. Walker came dashing up on a horse. He had become acquainted with her when she was a prisoner in Castle Thunder, and he asked her why she was there. She replied, "I'll show you," and jumped off her horse and went in among the falling shot and shell and ministered to the wounded. "I've seen rough, shaggy men cry like children when she'd talked to them," said the judge. After the battle of Rasaca, in Georgia, he saw her again in her tender ministrations. She kissed a boy about sixteen years, old who was wounded with a bullet through his chest. He threw his arms around her neck and clung to her until he died. What a terrible commentary on our civilization and in our boasted free republic that a person can be subjected to such contumely, to the avoidance of women, the contempt of men, and be the object of derision for every street gamin and journalistic fledgling, simply because of the garb. Nobody can say that Dr. Walker has been immodest in her wearing of the masculine dress, for she is a very prude even in her reasons for espousing it; but she has certainly sinned against the sweet graces of womanhood in donning anything so ugly as the male costume after leaving the army, where something like it was indispensable. But this whim of hers should not have obliterated all remembrance of how she had been one of the earliest and strongest friends to push for women, and of all her loyal service to her country.—*Woman's Tribune.*

Indigestion

Horsford's Acid Phosphate.

A preparation of phosphoric acid and the phosphates required for perfect digestion. It promotes digestion without injury, and thereby relieves those diseases arising from a disordered stomach.

Dr. E. J. WILLIAMSON, St. Louis, Mo., says: "Marked beneficial results in imperfect digestion."

Dr. W. W. SCOFIELD, Dalton, Mass., says: "It promotes digestion and overcomes acid stomach."

Dr. F. G. McGAVOCK, McGavock, Ark., says: "It acts beneficially in obstinate indigestion."

Descriptive pamphlet free.

RUMFORD CHEMICAL WORKS,
PROVIDENCE, R. I.

BEWARE OF SUBSTITUTES AND IMITATIONS.

Caution:—Be sure the word "Horsford's" is *printed* on the label. All others are spurious. Never sold in bulk.

BUFFALO LITHIA WATER.

There has been so much printed about the celebrated Buffalo Lithia Springs water from Virginia that the medical profession, as well as the public, are fully aware of the medicinal value of this spring water. When professional men of the standing of Dr. J. H. Clairborne, of Petersburgh, Va.; Dr. Landon B. Edwards, of Richmond; Dr. G. H. Boyland, of Baltimore; Dr. Wm. C. Wile, of Danbury, Conn.; Dr. J. B. Jones, of Charlotte, N. C.; Dr. Jno. C. Coleman, U. S. N.; Dr. Thomas P. Atkinson, of Richmond; Dr. Wm. Harrington, of Hot Springs, Ark.; Dr. Cyrus Edson, of New York; Dr. Allard Memminger, of the University of South Carolina; Dr. J. S. Wellford, of Richmond; Dr. Martin L. James, of Richmond; Dr. Harvey L. Byrd, of Baltimore, and many more positively state that they have used Buffalo Lithia Water with beneficial and curative effect in their practice in stone in the bladder, gout, rheumatism, and all diseases dependent upon a uric acid diathesis, it is useless to add one word to prove what Buffalo Lithia Spring water is, and what it can do. We have thought it best, therefore, to depart from the beaten track, and will try to give some additional information on the subject of mineral waters in general and lithia water in particular.

Mineral spring waters are so designated when the water contains a larger amount of minerals, either in solution or of a gaseous nature, than the ordinary drinking water, and are employed on account of these constituents for their curative influence in all diseases human flesh is heir to. All alkaline mineral waters act beneficently on the mucous membranes, the glandular and lymphatic systems, the kidneys, and skin, and regulate the secretion of mucus. They counteract the formation of stone and are antacid in their action; they increase the secretion of urine, and are therefore employed in gout, chronic skin eruptions, indurated glands, chronic catarrh and nervous diseases. When to these qualities is added the specific effect of lithium, one of the best solvents of uric acid known, the waters indeed become

CLEVELAND'S SUPERIOR Baking Powder.

The Official Reports of the
United States Government, 1889,
Canadian Government, 1889,
New Jersey Commission, 1889,
Ohio Food Commission, 1887,
prove that Cleveland's is

THE STRONGEST

of all the pure* cream of tartar baking powders.

*Ammonia or alum powders, whatever their strength, should be avoided as injurious.

25 CTS. PISO'S CURE FOR CURES WHERE ALL ELSE FAILS. Best Cough Syrup. Tastes good. Use in time. Sold by druggists. CONSUMPTION 25 CTS.

SCOTT'S EMULSION

OF PURE COD LIVER OIL WITH HYPOPHOSPHITES OF LIME AND SODA.

THE STANDARD EMULSION OF COD LIVER OIL THROUGHOUT THE WORLD.

A BEAUTIFUL CREAMY MIXTURE—ALMOST AS PALATABLE AS MILK.

Having much greater remedial power than the crude Cod Liver Oil, without any of its nauseating effects.

Its PALATABLENESS, EASE OF DIGESTION, and long tolerance by most sensitive stomachs as well as its reliable therapeutic effect, has given it special favor with the medical Profession, and receives their unqualified endorsement and support.

Possessing as it does the tonic and stimulating properties of the Hypophosphites in combination with the strengthening and fattening qualities of the Cod Liver Oil—gives it a remedial value in WASTING DISEASES, ANÆMIA or IMPOVERISHED BLOOD, EMACIATION and CONSUMPTION—unequalled by any single or combined remedy in existence. The rapidity with which delicate children fatten and grow strong on this palatable Emulsion, is very remarkable.

Samples will be sent free except express charges to any wishing to try this preparation. For sale by all druggists.

SCOTT & BOWNE, New York.

valuable. Lithium is one of the rarer metallic elements, intermediate in its character between sodium and barium, and was discovered in 1817 by Arvedson in the course of an analysis of petalite in Berzelius' laboratory. He recognized the presence in this mineral of a new kind of alkali, which his master subsequently named lithia to denote its mineral origin. Lithia is widely disseminated throughout the mineral world, traces of it being found in almost all alkaliferous silicates, in the soils derived from these, and in many mineral waters, nowhere occurs in any abundance except in the immense masses of lithia-mica (lepidolite), known to exist in Bohemia. The extraction of pure lithia from lepidolite in any form is difficult. Of course chemically pure lithia can be obtained. Carbonate of lithia dissolves in pure water, one litre taking up 12 grammes and if the water is kept saturated with carbonic acid gas it will dissolve 52 5 grammes. This fact may serve to explain the apparently large quantities of lithia found in one so-called natural lithia water, "carbonated." *Metallic lithium*, although long before known to exist, was successfully prepared for the first time in 1855 by Bunsen. Lithium is a silver-white metal of only .58 specific gravity (it floats on rock oil), somewhat softer than lead, and, like it, susceptible of being pressed into wire. It tarnishes in air. The metal melts at 180° C, and at a somewhat higher temperature takes fire and burns into oxide with a brilliant white flame. Lithia-salt solutions behave to general reagents pretty much like those of potash and soda, from which, however, they differ in a few points. Lithia, when used medicinally, is employed either in the form of the carbonate, bromide or citrate when natural lithia water, which is always to be preferred, cannot be obtained. The carbonate of lithia is a white, light powder, looking very much like magnesia, has no odor and a decided alkaline taste. It is almost insoluble in alcohol, but dissolves readily in 130 to 140 parts of water. With acids it effervesces. As found in the stores it is generally a sesquicarbonate, and soluble in 100 parts of water, while the chemically pure monocarbonate requires 100 parts of cold water to dissolve it. The carbonate of lithia, of all alkalis, possesses the greatest solvent powers for uric acid. Professor Binswanger states that 25 parts by weight of lithic carbonate will dissolve 90 parts by weight of uric acid. It is, therefore, considered an effective medicine in gout and uric acid diathesis, especially in uric acid concretions in the bladder and kidneys. In many cases this peculiar property is not only employed internally, but also by injection, and with marked benefit. Several prominent practitioners in Europe report marked success from the use of lithia water as a gargle in dissolving diphtheritic and croupy membranes.

Lithium Bromide is another of the later pharmaceutical preparations of lithia which, in addition to its employment in those diseases where the bromides are indicated, has been used with great success in solving uric acid concretions and deposits and has been found specially efficacious in lithiasis and gout.

Lithium Citricum is made by the addition of citric acid and makes an effervescent lithia solution.

Lithium has been discovered in various springs in Europe, notably that at Baden-Baden. A new bath has been established at Assmannshausen, on the Rhine, in consequence of the discovery there of a weak alkaline spring containing lithia.

One of the striking facts about springs containing lithia is that such springs are only found where the geological formation of the ground shows the presence of lepidolite. Mecklenburg County, Virginia, where the Buffalo Lithia Springs are situated, possesses this peculiar formation to a remarkable degree.

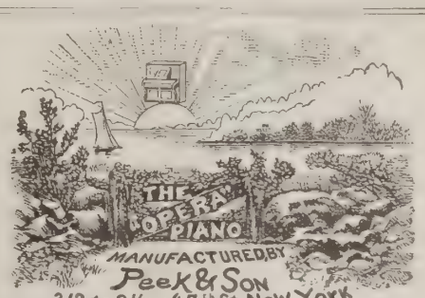
Enough has been said to show that lithia is a most valuable remedy, that the Buffalo Lithia Springs water contains it in a natural state, and in sufficiently large quantities to make this one of the most valuable medicinal spring waters. The medical profession unanimously acknowledge this, and the use of these waters has been increasing from year to year, until now they have attained a sale far beyond the most sanguine expectation of its proprietor, Colonel Goode, who richly deserves his success for his enterprise and push in making the virtues of the Buffalo Lithia Spring water known and bringing it to the notice of the profession.

"THE GREATEST THING IN THE WORLD."

Prof. Drummond's famous address on "Love: the Supreme Gift," sometimes called "The Greatest Thing in the World," which has had a wonderfully large sale at 35 cents a copy, and has undoubtedly done a great deal of good, is now published by Alden, unabridged, in large Pica type, for *three cents!* It ought, now, to circulate by the million. The same publisher issues Drummond's "Natural Law in the Spiritual World," in large type, fine "half-seal" binding, for 35 cents, plus postage, 10 cents. These are two items characteristic of the 132-page Catalogue, which is sent free on request, by the publisher, JOHN B. ALDEN, 393 Pearl Street, New York.

RHEUMATISM.

We asked an old physician the other day, "What is rheumatism?" His answer is worth printing, because he does not assume to know it all and yet gives a great deal of practical common sense information. "Probably no disease has been studied more, experimented upon more, theorized upon more than rheumatism, and certainly no disease is understood less by physicians and patients. An absolute cure for it, applicable and effective in all cases, is not known, even in these days of salicylates, much better than when two hundred years ago it was treated with earth-worms, snake oil and frogs' eyes. However, some advance has been made, and although physicians cannot always cure, they can often alleviate the pain or prevent the attack. Rheumatism may be acute or chronic. It is unquestionably a constitutional disease, and although it is liable to run into complications, it shows itself most plainly in painful and generally inflamed conditions of the joints. Acute rheumatism is hereditary in about one-quarter of the cases, and is the phase of the disease which affects the young and middle-aged. It is always attended with more or less fever, and an attack of it is usually commenced with chilliness and shuddering, known as 'rigors.' Prevention is the great thing Exposure to variable weather is a prolific cause, and a thorough wetting on a cold, raw day is almost certain to result in a more or less severe attack of the disease. Excessive fatigue, a depressed condition, over-work, anxiety, or any long-continued drain upon the system may bring about rheumatism. Climate has a great deal to do with it too, as a much larger proportion of cases exist in cold, damp regions. I cannot too strongly advise the greatest diligence in the matter of drainage, warmth and dryness in our dwelling-houses, and I want to condemn with all possible emphasis the custom of sleeping in rooms immediately over the cellar; or, what is worse and not at all uncommon in country houses, sleeping in rooms on the ground floor without any cellar under them. The climate is changeable enough, especially on the Atlantic slope, to justify me in advising every one to wear wool under-clothing; not necessarily thick garments, but of wool. It need not be red nor 'pure cochineal dyed' nor 'medicated' but let it be wool—all wool. So much for prevention; but if you are so unfortunate as to be attacked with the disease, let me give you the most successful treatment. The attack comes on with fever, swollen painful joints—perhaps one, perhaps three, or all, or any number, but generally the knees, hips and elbows; the patient is restless but afraid to move—often the very pressure of the bed-cloths causes agony; frequently there is profuse perspiration. The pain often goes from one joint to another without any apparent cause. The patient should lie between woollen blankets, and should move as little as possible, especially the affected joints, bathe the parts with warm water containing about a tablespoonful of laudanum to each quart of water. Another excellent lotion is a strong solution of carbonate of soda (sal soda) to which has been added a few drops of oil of wintergreen. The wintergreen is not used because of its perfume, but because it is peculiarly rich in salicin a comparatively new drug, which is especially valuable in rheumatism. The remedies for internal use are innumerable, but where a patient prefers to treat himself, I know of no better remedy, or one which combines so much in one, than Ayer's Sarsaparilla, as put up by Dr. J. C. Ayer & Co. of Lowell, Mass. I have long since made up my mind that many people prefer to use proprietary medicines and therefore I advise them to use the best. All of the remedies prepared by J. C Ayer Co are put up on regular approved physicians prescriptions, from the best drugs, in a conscientious manner; and I know from experience that they are always reliable."



A HIGH-GRADE PIANO
AT A VERY MODERATE PRICE.
NEW DESIGNS. FANCY WOODS.
Terms Easy. Monthly Instalments.
TWO, THREE AND FOUR PEDALS.
Catalogues, Prices, Terms, Etc., sent to any address.
EVERY PIANO WARRANTED 5 YEARS.
(Mention this Paper.)

Fine Table Wines
From our Celebrated Orleans Vineyard.
Arpad Haraszthy & Co
Producers of the
ECLIPSE
CHAMPAGNE,
530 Washington St.
SAN FRANCISCO.
GENERAL AGENCIES:
NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOS. H. R. PEEBLES' SONS CO., 73 West Fourth Street.
DETROIT: G. & R. McMILLAN & CO., 181 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.



(The Worcestershire.) LEA & PERRINS' (The Worcestershire.)
SAUCE.
IMPARTS THE MOST DELICIOUS TASTE AND ZEST TO
HOT AND COLD MEATS, GRAVIES, SALADS, SOUPS, GAME, FISH, WELSH RAREBITS, Etc., Etc.
Signature on every bottle of the genuine and original.
Lea & Perrins
JOHN DUNCAN'S SONS, NEW YORK.

THE N. Y. HAY EXCHANGE BULLETIN.

OFFICIAL REPORT OF THE HAY AND STRAW MARKET AT NEW YORK.

COMMISSION SALESMEN.

NOTICE.

These names are arranged alphabetically.

WM. AFFLECK & CO.,
Commission Merchants in
HAY AND STRAW,
Office No. 5,
N. Y. Hay Exchange Building.

J. ALSDORF,
Commission Dealer in
HAY AND STRAW,
33d Street and 11th Ave.,
NEW YORK.

E. A. DECKER. F. W. TOMPKINS.
DECKER & TOMPKINS,
Commission Merchants in
HAY, STRAW, GRAIN,
Office: 16 New York Hay Exchange Building.

L. S. DILLENBACK. T. O. PECK.
DILLENBACK & PECK,
MAIN OFFICE:
Room O, N. Y. HAY EXCHANGE, N. Y. City.
STOREHOUSE AND BRANCH OFFICE
101, 103 and 105 North 5th St.,
and 152 and 154 Berry St.,
Palmer's Dock. Brooklyn, E. D.

EDWIN B. DUSENBERRY,
COMMISSION MERCHANT,
And Wholesale Dealer in
HAY, STRAW AND GRAIN.
No. 1, N. Y. Hay Exchange, New York.

THOS. FONDA & CO.,
Commission Merchants
And Dealers in Hay, Straw, Grain and Country Produce,
13 & 14 N. Y. Hay Exchange Building.

N. A. FULLER,
COMMISSION MERCHANT IN
HAY AND STRAW,
33d Street and 11th Ave.,
NEW YORK.

THEO. P. HUFFMAN & CO.,
COMMISSION MERCHANTS
In Hay, Straw, Grain, Feed, &c.,
648 & 650 West 34th Street,
Bet. 11th & 12th Aves., N. Y.

H. B. Jenkins. F. S. Williams.
JENKINS & WILLIAMS.
COMMISSION MERCHANTS IN
HAY, STRAW AND GRAIN,
HAY EXCHANGE.

The N. Y. Hay Exchange is located at 601 W. 33d St., corner 11th Avenue.

Only the cards of members of the N. Y. Hay Exchange appear on this page.

RULES FOR GRADING HAY AND STRAW

As Adopted by the N. Y. Hay Exchange.

CHOICE OR PRIME HAY—Shall be pure timothy, properly cured, bright, natural color, sound and well baled. No. 1—Shall be timothy, not more than one-eighth (⅛) mixed with "red top" properly cured, bright natural color, sound and well baled. No. 2—Shall be timothy, not more than one-quarter (¼) mixed with red top and blue grass, properly cured, good color, sound and well baled. No. 3—Shall include all timothy not good enough for No. 2, proportionately mixed with blue grass, red top, and clover, sound and well baled. SHIPPING—Shall include all hay not good enough for other grades, and may be natural meadow, free from wild or bog grass, and must not contain over one-third (⅓) clover, sound and well baled. CLOVER MIXED—Shall include all hay containing not over two-third (⅔) clover, and one-third (⅓) timothy, properly cured, sound, and well baled. CLOVER—Shall be medium grown, properly cured, good color, sound, and well baled. NO GRADE OR REJECTED HAY—Shall include all hay badly cured, musty, stained, or in any way unsound.

No. 1. RYE STRAW—Shall be clean, bright, long Rye, in bundles, sound, well and securely baled. No. 2—Shall be long Rye, in bundles, sound, well and securely baled. SHORT RYE—Shall be clean, not bundled, sound, well and securely baled. OAT STRAW—Shall be clean, bright, sound, well and securely baled.

In the New York market bale-wood is weighed in without tare. In all other markets it is deducted.

These quotations for choice, No. 1 and No. 2 hay are for large bales. 5c. per cwt. less when in perpetual press bales.

The New York quotations are per cwt. At other points, per ton.

NEW YORK, Feb. 2, 1891.

The following are the market prices to-day at New York.

	Large Bales.	Small Bales.
Prime Hay	60c @	60c @
No. 1	55 @ 60	55 @
No. 2	50 @ 55	50 @
No. 3	45 @	45 @
Shipping	45 @	45 @
Clover mixed	45 @ 50	45 @ 50
Clover	40 @ 45	40 @ 45
Prime Rye Straw	85 @ 90	45 @ 55
No. 2 "	80 @ 85	
Short "	60 @	
Oat and Wheat	50 @	

Receipts week ending Jan. 31, as follows:

Via N. Y. Central	268 cars.
" West Shore	161 "
Other roads by Lighter, 34th Street	75 "
Total	504 cars.
Total last week	344 "
Increase	160 "

For the past week the hay market has been fairly active, but prices have ruled quite as low as any time this season, as will be seen by the above quotations. Shipping hay is in better demand and brings more satisfactory prices than any other grade.

This week we quote both large and small bales, for shippers of small baled hay have thought the quotation of No. 1 and No. 2 misleading, as it has been impossible to realize quotation prices on these grades for the past month.

The stock of rye straw is accumulating. Market consequently weak.

OSCAR KENT,
Commission Merchant,
HAY AND STRAW,
Room 20, New York Hay Exchange Building.
Personal attention guaranteed all consignments.

JOHN KERWIN & SON,
DIRECT RECEIVERS OF
HAY, GRAIN and GENERAL PRODUCE
DEPOT AND STOREHOUSES,
Palmer's Dock, Nos. 97 & 99 North Fifth Street.
BROOKLYN, N. Y.
SHIPPING ADDRESS, PALMER'S DOCK, BROOKLYN, N.Y.
West Shore R. R., N. Y. C. & H. R. R. R., N. Y. L. E. & W. R. R., Pennsylvania R. R., D. L. & W. R. R., Lehigh Valley R. R., and connections.

W. J. OVEROCKER. PERRY HATCH.
OVEROCKER & HATCH,
Commission Merchants in
HAY, STRAW AND GRAIN,
33d Street & 11th Avenue, New York.
References: West Side Bank, New York City; Exchange Bank, Holly, N. Y.

Gilbert Plowman, NEW YORK. Spencer Billington, FORT HUNTER, N. Y.
PLOWMAN & BILLINGTON
COMMISSION MERCHANTS,
HAY, STRAW, GRAIN, &c.
No. 75 N. Y. Hay Exchange,
33d St. & 11th Ave., NEW YORK.

JAMES ROZELL & SON,
Commission Merchants and Wholesale Dealers in
HAY, STRAW, GRAIN
AND
COUNTRY PRODUCE.
N. Y. Hay Exchange, New York.

SKINNER, BLOOM & CO.,
Successors to Rogers, Skinner & Co.,
COMMISSION MERCHANTS
And Dealers in
Grain, Flour, Hay, Feed, Meal, &c.,
74 CORTLANDT STREET, - NEW YORK.
Barge GYPSIE, Foot Bridge St., Brooklyn.

H. SLINGERLAND,
Barges MERCHANT and HARVEST QUEEN
Foot of West 11th Street,
HAY AND STRAW.
Also, 33d and 35th Streets, and all Railroad terminals. Special facilities for lighterage free goods.

CHARLES F. SWAN,
Commission Merchant in
HAY, STRAW & GRAIN,
At all the Railroad Terminals in New York, Brooklyn, Jersey City, &c.
MAIN OFFICE,
108 BROAD ST., NEW YORK.

TITUS, WELLS & WILLETS,
Commission Merchants and Dealers in
HAY AND STRAW,
133 Roosevelt St.,
NEW YORK.

VAN ALSTYNE & CO.,
COMMISSION MERCHANTS.
SPECIALTIES:
HAY, STRAW & FLOUR,
Nos. 2 and 4 Stone St., New York.
Liberal advances made on consignments.

G. E. Van Vorst. James M. Hillery.
VAN VORST & CO.,
COMMISSION MERCHANTS,
HAY, STRAW AND GRAIN
N. Y. Hay Exchange, 33d St., & 11th Ave.
562 & 564 West 34th St., NEW YORK.

NOTICE.

These names are arranged alphabetically.

HOSMER, CRAMPTON & HAMMOND,

NO. 43 COMMERCIAL STREET,

BOSTON.

COMMISSION MERCHANTS,

HAY, STRAW, FLOUR & GRAIN.

E. B. HOSMER, G. W. CRAMPTON, BENJAMIN HAMMOND, A. L. ROBINSON.

BOSTON HAY AND STRAW MARKET.

Hay, choice to fancy in large bales	$14.00 to $15.00
Hay, choice to fancy, perpetual pressed bales	13.00 to 13.50
Hay, fair to good	11.50 to 12.50
Hay, poor to ordinary	9.00 to 11.00
Hay, Clover and Clover mixed	9.00 to 11.00
Hay, swale	8.00 to 9.00
Straw, Rye, good to prime	17.50 to 18.00
Straw, Oat	9.00 to 10.00

BOSTON, Feb. 2d, 1891.

Receipts for the week are 321 cars of hay and 35 cars of straw; corresponding week last year, 329 cars of hay and 36 cars of straw. Receipts for the month, 1,654 cars of hay and 144 cars of straw; same month last year, 946 cars of hay and 94 cars of straw.

There is a large amount of hay on the tracks of the various railroads, which the receivers are being crowded to move promptly and with a slack demand. Market continues weak and in buyers' favor.

Rye straw is steady at quotations.

H. F. WILSON,
WIRE BALE TIES,
458 WEST 38th STREET, New York.

THURSTON'S IVORY PEARL TOOTH POWDER
WILL KEEP THE TEETH IN PERFECT CONDITION AND THE GUMS HEALTHY.
Price 25 & 50 Cents PER BOTTLE.

HAMMOND'S
CELEBRATED
Calumet Oleomargarine

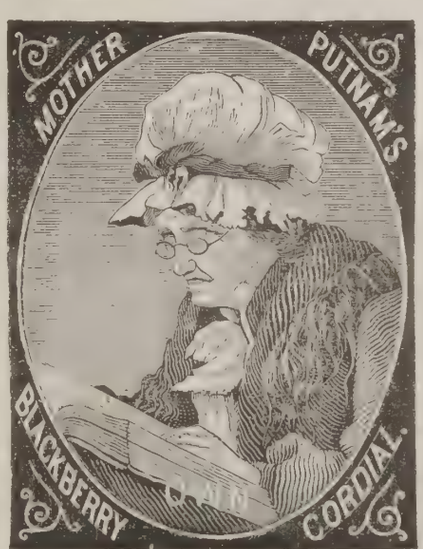
Strictly pure, cheap and healthful.
Ask your grocer for it.
Put up in packages of all sizes, also prints and rolls.

C. H. HAMMOND CO.,
607 to 615 THE ROOKERY,
CHICAGO.

Also offices at Boston, South Omaha, Neb., and Hammond, Ind.

40 COUPON OFFERS
and our large Illustrated Catalogue of **SCROLL SAWS**, Tools, Designs, and **30 Cts. WORTH** of *full size* **SCROLL SAW DESIGNS**, sent **FREE** for **10 Cts.** in stamps to pay postage.
JOHN WILKINSON CO., 369 State St., Chicago.

NATURAL MINERAL PURGATIVE WATER.
From the Springs of
VILLACABRAS.
Prescribed by the Highest Medical Authorities.
Stronger effects than any other under smaller volume. No smell—no repulsive taste—no after-constipation—no gripes. As a daily laxative it can be taken either pure or mixed with milk, tea or broth.
Sold by all Good Druggists.



C-U-R-E-S
DIARRHŒA, DYSENTERY,
MALARIA,
all ailments of the bowels. Is an anti-dyspeptic, and a **DELICIOUS INVIGORATIVE.** Leading Physicians prescribe it for **ADULTS AND CHILDREN.** *FOR SALE* by Druggists and dealers.
RHEINSTROM BROS., DISTILLERS OF FINE LIQUEURS,
54, 56, 58, 60, 62 E. 3rd STREET, CINCINNATI, O.

HARTSHORN'S SELF-ACTING SHADE ROLLERS
NOTICE SCRIPT NAME OF *Stewart Hartshorn* ON LABEL, AND GET THE GENUINE
HARTSHORN

GOLD MEDAL, PARIS, 1878.



W. BAKER & CO.'S
Breakfast
Cocoa
from which the excess of oil has been removed,
Is Absolutely Pure and it is Soluble.

No Chemicals
are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

THE GREAT AMERICAN TEA COMPANY

LADIES

GET UP ORDERS.
Entire New Departure.
A HANDSOME PRESENT TO EVERY SUBSCRIBER.

THE GREATEST INDUCEMENTS EVER KNOWN TO INTRODUCE OUR NEW GOODS.

If you enjoy a cup of **Delicious Tea** send in your orders. 3½ lbs. Fine Tea by mail on receipt of $2 and this "ad". Beautiful premiums given away with $5 orders and upwards. The **most extraordinary bargains** ever offered, during the next thirty days. China Tea Sets and Lamps with $10, $15 and $20 orders to introduce our excellent **New Crop Teas.** Formosa and Amoy, Oolong, Congou, English Breakfast, Japan, Imperial, Young Hyson, Gunpowder, Sun Sun Chop and Mixed. Good mixed teas 20c. per lb. Headquarters in United States for Fine Teas. One pound of our tea will go farther than three pounds of trash. Thirty years' national reputation for selling **Pure Goods Only.**

THE GREAT AMERICAN TEA COMPANY,
P. O. BOX 289. 31 and 33 Vesey Street, New York.

PUBLICATIONS OF THE

ANALYST PUBLISHING CO.

THE AMERICAN ANALYST.
Weekly. Every Thursday. $1 per year.

THE ROOFER, TINNER AND SHEET-IRON WORKER.
Monthly. 15th each month, $1 per year.

THE LEATHER MANUFACTURER.
Monthly. 1st each month. $3 per year.

Reliable agents and representatives wanted everywhere on liberal terms. Address

ANALYST PUBLISHING CO.
19 PARK PLACE, NEW YORK.

THE LABORATORY.

To Inventors, Manufacturers and Applicants for Patents

The AMERICAN ANALYST may be consulted upon all matters involving theoretical or applied chemistry. Advice and opinions given. Analyses and assays made. Patents perfected and secured. Terms reasonable.

Address, AMERICAN ANALYST,
19 Park Place, N. Y.

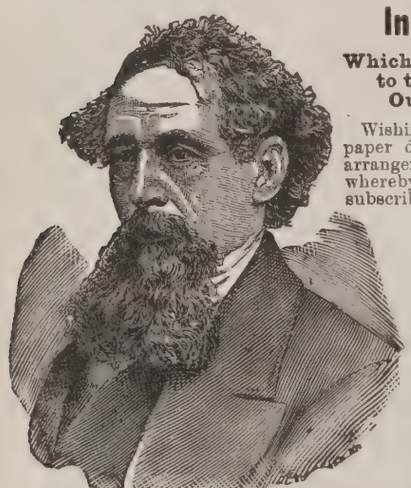
GRAND PREMIUM OFFER!

A SET OF THE

WORKS OF CHARLES DICKENS,

In Twelve Large Volumes,

Which we Offer with a Year's Subscription to this Paper for a Trifle More than Our Regular Subscription Price.



CHARLES DICKENS.

Wishing to largely increase the circulation of this paper during the next six months, we have made arrangements with a New York publishing house whereby we are enabled to offer as a premium to our subscribers a **Set of the Works of Charles Dickens,** in **Twelve Large and Handsome Volumes,** with a year's subscription to this paper, for a trifle more than our regular subscription price. Our great offer to subscribers eclipses any ever heretofore made. Charles Dickens was the greatest novelist who ever lived. No author before or since his time has won the fame that he achieved, and his works are even more popular to-day than during his lifetime. They abound in wit, humor, pathos, masterly delineation of character, vivid descriptions of places and incidents, thrilling and skillfully wrought plots. Each book is intensely interesting. No home should be without a set of these great and remarkable works. Not to have read them is to be far behind the age in which we live. The set of Dickens' works which we offer as a premium to our subscribers is handsomely printed from entirely new plates, with new type. The twelve volumes contain the following world-famous works, each one of which is published *complete, unchanged, and absolutely unabridged:*

DAVID COPPERFIELD,
MARTIN CHUZZLEWIT,
NICHOLAS NICKELBY,
DOMBEY AND SON,
BLEAK HOUSE,
LITTLE DORRIT,
OUR MUTUAL FRIEND,
PICKWICK PAPERS,
BARNABY RUDGE AND CHRISTMAS STORIES,
OLIVER TWIST AND GREAT EXPECTATIONS,
THE OLD CURIOSITY SHOP AND THE UNCOMMERCIAL TRAVELER,
A TALE OF TWO CITIES, HARD TIMES AND THE MYSTERY OF EDWIN DROOD.

The above are without question the most famous novels that were ever written. For a quarter of a century they have been celebrated in every nook and corner of the civilized world. Yet there are thousands of homes in America not yet supplied with a set of Dickens, the usual high cost of the books preventing people in moderate circumstances from enjoying this luxury. But now, owing to the use of modern improved printing, folding and stitching machinery, the extremely low price of white paper, and the great competition in the book trade, we are enabled to offer to our subscribers and readers a set of Dickens' works at a price which all can afford to pay. Every home in the land may now be supplied with a set of the great author's works.

"BILLET"

are

Carefully Selected
French Sardines,
Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,
HOWARD STREET, BOSTON, MASS.

OUR GREAT OFFER

TO SUBSCRIBERS

TO THE

AMERICAN ANALYST.

We will send the **ENTIRE SET OF DICKENS WORKS,** *in* **TWELVE VOLUMES,** *as here described, all postage prepaid by ourselves, also* **THE AMERICAN ANALYST** *for* **ONE YEAR,** *upon receipt of* **$1.50,** *which is only* **50** *cents more than the regular subscription price of this paper.* Our readers, therefore, practically get a set of Dickens' works in twelve volumes for only **50** cents. This is the grandest premium ever offered. Up to this time a set of Dickens' works has usually been $10.00 or more. Tell all your friends that they can get a set of Dickens' works in twelve volumes, with a year's subscription to **THE AMERICAN ANALYST** for only **$1.50.** Subscribe now and get this great premium. If your subscription has not yet expired, it will make no difference, for it will be extended one year from date of expiration. We will also give a set of Dickens', as above, free and post-paid, to any one sending us a club of three yearly subscribers.

ADDRESS:

THE ANALYST PUBLISHING CO.
No. 19 PARK PLACE,
NEW YORK.

Tabasco Pepper Sauce

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced, by connoisseurs, to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY,

NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

Don't kick



because your business is bad, but advertise If you don't know how to, write to us and we will tell you.

We will prepare your advertisement or give you advice and assistance to aid you in preparing it yourself. We will have the advertisement set in type and procure illustrations if any are needed. When a satisfactory advertisement has been produced we will furnish proofs and an electrotyped pattern to be used in duplicating the advertisement if the display or illustration make an electrotype desirable.

Address GEO. P. ROWELL & CO.,
Newspaper Advertising Bureau,
10 Spruce St., N. Y.

NATRONA BI-CARBONATE OF SODA.

(ABSOLUTELY PURE.)

The nature of the raw material from which NATRONA BI-CARBONATE OF SODA is made—viz., kryolith, a mineral containing *pure sodium*—insures a purity and uniformity of product which cannot be obtained from any other known material. In making BI-CARB. SODA from any other raw material, the use of sulphuric acid is a necessity, but none is used in any part of the process of making NATRONA BI-CARB.; hence its entire freedom from the slightest trace of arsenic, which is always present in ordinary soda. Its absolute purity and entire freedom from all traces of *sulphate of soda*, common salt and other impurities, render NATRONA BI-CARB. NEARLY TASTELESS, and being bolted through the finest bolting-cloth, insures the finest stage of division.

To these indisputable facts the attention of CONSUMERS of soda is specially called. They are IMPORTANT, and should influence both those who use and those who sell soda, to buy and sell NONE BUT THE BEST.

The NATRONA BI-CARB. Soda is kept in stock by almost every wholesale druggist and grocer throughout the United States, of whom it may be ordered.

Natrona Bi-Carb. Soda is unequaled by any other brand of English or American Manufacture.

PENNA. SALT MANUFACTURING CO.,

NATRONA CHEMICAL WORKS. PHILADELPHIA, PA.

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

ESTABLISHED IN LONDON, 1831.

DEAN'S PATENT

Ardenter Mustard



W. G. DEAN & SON.
361 & 363 WASHINGTON STREET; 84, 86, & 88 NORTH MOORE STREET, N.Y.

RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,
184 Greenwich St., N. Y.

DR. PRICE'S CREAM Baking Powder.

Most Perfect Made

A Pure Cream of Tartar Powder—
Superior to every other known.
Used in Millions of Homes—40 Years the Standard.
Delicious Cake and Pastry, Light Flaky Biscuit, Griddle Cakes
Palatable and Wholesome.
No other baking powder does such work.

Vigoral

FOR

STRENGTH, NOURISHMENT AND REFRESHMENT.

PREPARED BY

ARMOUR & CO.,

CHICAGO,

From their celebrated EXTRACT OF BEEF, further strengthened in muscle-forming constituents by the addition of pure beef in powdered form.

Vigoral is seasoned ready for use and makes a delicious hot drink for cold weather.

SWIFT'S

CHOICE

Chicago Dressed Beef

AND

MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,

UNION STOCK YARDS,

CHICAGO, ILLS.

We shall be glad to supply our readers with any periodical published at club rates.

Send us a postal naming periodical and we will quote vou prices.

ANALYST PUBLISHING CO.,
19 Park Place, New York.

GLENN'S SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,

C. N. CRITTENTON,
115 FULTON STREET,
NEW YORK.

Be progressive and keep abreast of the times. Avoid dyspepsia by using **Lard Compound** and **Cottolene,** a substitute for lard.

The highest medical authorities pronounce them healthful; and expert cooks commend them.

Our **Clairette** brand of cotton oil soap is the purest and best laundry soap in the market; as pleasant to the hands as genuine castile.

N. K. FAIRBANK & CO.,
CHICAGO AND ST. LOUIS.

The Standard of Excellence.

KINGSFORD'S

OSWEGO

Pure and Silver Gloss



STARCH

KINGSFORD'S
OSWEGO CORN STARCH
FOR
Puddings, Custards, Blanc-Mange, Etc.
THE PERFECTION OF QUALITY.
WILL PLEASE YOU EVERY TIME.
Always ask your Grocer for these goods.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 7. NEW YORK, THURSDAY, FEBRUARY 12. 1891. WHOLE No. 207

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - - $1 per year.
Single Copies, - - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.

Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.

Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,

H. LASSING, M. D., } *Editors.*
T. P. McELRATH, }

No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

A Blinding Habit 77
A Nation's Needs 77
Black Coffee 77
Domestic Dietetics 77
Editorials 73
Prof. Koch Seeks Rest; Cooking and Eating; Intemperance in Germany.
Hay Market Official Bulletin 80
Hot-house Poison 78
Menu Cards 76
Metropolitan Millionaires 75
Modern Surgery 74
Sleep 74
The World of Water 78
Wholesome Exercise 75
Women's Work 76

PROF. KOCH SEEKS REST.

After several months of incessant labor, Prof. Koch has been compelled to abandon for a time his laboratory labors, and he is seeking rest and recuperation in Egypt. The professor will probably be absent from Berlin about three months. He explains that he only partially disclosed the method of the production of the curative lymph because he desired to stop the rush of doctors to Berlin. If he had described the method of manufacture more fully, he would have been more worried about the details. Great discontent prevails among medical men regarding the published account of the method of manufacture of the lymph. They have made numberless attempts to produce the lymph, but they find Prof. Koch's description totally inadequate to enable them to make it. Meanwhile, our American scientists are prosecuting independent researches on the line indicated by the German doctor. A despatch from Ann Arbor, Mich., of February 1st, announced that enough of the Koch lymph has been received at the university to make 1,000 injections, and experiments will be made with it at once. Prof. Vaughan recently made an announcement which caused much excitement among the medical fraternity, to the effect that he has discovered germs which were the causes of the diseases of typhoid fever and cholera infantum. Now he says if the Koch remedy proves a success he will be able to cure the above-named diseases in the same way as he had manufactured a typhoid fever lymph—upon the same principle that Koch makes his consumption lymph. He has already experimented with the new lymph upon small animals, and is only waiting before trying it upon persons until he can ascertain the action of the Koch lymph.

COOKING AND EATING.

The man or woman who lives in New York and is content with inferior food is unworthy of the privileges of civilization, for no other city in the world is better supplied—hardly one is as well supplied with the best of every viand known on earth, and the very volume of the traffic serves to keep prices down within the reach even of the poor. It is possible to live daintily and well on little money, and no subject in common life so well repays study and care, as the supplying of the table, yet it is a subject which for some reason seems to receive far less attention than it deserves. Whether from indolence, preoccupation, or a feeling of ill-defined shame, men, as a rule, understand little about the selection of food and still less about its preparation or cooking. They leave the matter to their wives or servants almost entirely, and even fail to appreciate the relation of cause and effect when poor, or poorly cooked food has made them ill. This is not as it should be. Wholesome epicureanism is not only one of the principal means of pleasure in this world, but it is a direct cause of good health and consequent happiness. Doubtless, if we consider the saying sufficiently to appreciate the subtlety of it, it is better to "eat to live" than to "live to eat," but if it be understood simply to mean that food should be shovelled in like fuel, and that the enjoyment of eating is an unworthy pleasure, the proposition should be reversed. Yet many otherwise intelligent people look upon epicures with contempt, and pride themselves on their indifference to the pleasures of the table. It has been pointed out many times that the whole art of cookery is the outgrowth of experiment and experience for many centuries. Combinations—and the greater part of our food consists of compounds—are the results of study and careful experiment, or in rare cases, as Charles Lamb fancifully imagines about roast pork, are due to remembered accidents. Moreover, the range of possibility in forming compounds is so nearly infinite, that progress is made constantly even now after generations of geniuses have passed away, leaving us the results of their work for a rich legacy. Think of the difference in skill and intelligence between the barbarous combination of pork and molasses and the artistically compounded chicken salad! The proof that progress is still made, lies all around us. It is only a few years ago that a man was counted foolhardy who would eat a hearty meal just before going to bed, and the fact that he did not die, or at least get sick after such a performance, was attributed to his natural strength. Lately it occurred to the medical fraternity, who had kept this superstition alive for many generations, that dogs and babies were wiser than they, being taught by natural instinct alone, and now they tell their patients to eat whenever they are hungry, and never to quit the table with the appetite unappeased. Progress in another line has come from the combinations of different schools of cookery. The English, French, German, Spanish, Italian and Chinese schools are all different and distinctive, and not very long ago a native of any of these countries would actually have suffered for lack of food if transferred to any other country. He might easily have gotten food enough, but it would not have been what he wanted. The effect of modern travel, however, has been to modify all schools, excepting, probably, the Chinese, and all have been thereby improved. The cooks of all nations have learned from others, and probably the very best cooking in the world is to-day done by good American cooks, for they have learned from all.

INTEMPERANCE IN GERMANY.

There is a popular impression that on account of Germany being a wine producing country its people are but little addicted to intemperance. Among the upper and middle classes—precisely those who are able to indulge their thirst with their native wine—that proposition is generally correct; but among the lower orders, who are constrained to gratify their drinking propensities with distillations of potatoes, cheap "branntwein," low grade "schnapps," and other stomach-corroding abominations, drunkenness is but too common. The vice has lately grown to such sinister proportions that the government has at length interposed to check it. It is expected that a general law for the suppression of drunkenness will be enacted and put in force in all the States of the German Confederation before the year is ended. A bill on the subject has been prepared by the Prussian Government and has received the approval of the Emperor, who, from the day he succeeded to the throne, has persistently demanded some restrictions upon the sale of intoxicating liquors. For nearly three years his Ministers have been engaged in collecting statistics and evidence on the points concerned, and the decisions at last arrived at have already been sanctioned by the Bundesrath. The bill decrees the withdrawal of saloon licenses and the imposition of fines upon saloon keepers who encourage persons of inebriate habits. The drunkards themselves will be fined if they

are poor, so as to prevent them from indulging in the vice of intemperance, and terms of imprisonment are to be imposed in cases where a monetary fine would presumably not have the desired effect.

MODERN SURGERY.

WONDERFUL ADVANCE OF THE SCIENCE IN THE PAST FIFTY YEARS.

The practice of surgery has always been more or less of a science. Even in the earliest times very serious surgical operations were undertaken with success, and some of them are now often wrongly proclaimed as modern in their origin. Ovariotomy was practised by the ancient Hindoos. An example of prehistoric trephining may be seen in a skull from Peru at the Museum of Natural History in this city. The morbid conditions which the surgeon has to combat are tangible and objective, so that his chief difficulties have been in the way of skilful manipulation of instruments, the management of blood vessels, and the proper cleansing of wounds. But there are striking features in the surgical science of the past fifty years which mark epochs in its advance, and of which the surgeons of other centuries could scarcely have dreamed. The first of these was the introduction of anæsthesia from chloroform and ether, making it possible for patients to undergo operations the very pain of which might under former conditions have caused their death. This has enabled the surgeon to prolong his procedure for hours, if necessary, instead of limiting himself to the hurried seconds and minutes which must have seemed an age to the tortured and conscious sufferer. We are now so accustomed to hear of the use of anæsthetics in all operations that it hardly seems conceivable that so few years have elapsed since they were first employed. Another revolution was accomplished by a discovery which has affected both surgery and medicine alike, and that is the parasitic origin of diseases. When it was learned that air and dust and water were everywhere filled with countless millions of invisible germs, and that some species of these, by being inhaled or swallowed, entered and poisoned the blood, producing contagious and infectious fevers; that some were the cause of fermentation, and that putrefaction was absolutely impossible without their presence, it did not take long for the surgeon to investigate their relation to the wounds which he was obliged to make, and through which these bacteria might readily find entrance into the system. Never before had he understood why erysipelas sometimes appeared in a wound; why blood poisoning would follow some of his operations; why some of his wounds would heal at once by first intention, while others would suppurate for weeks or show no tendency to heal; why tetanus or lockjaw was to be expected as an occasional complication; why hospital gangrene would haunt his wards like a dread phantom that could not be dislodged. How many thousands of lives have been sacrificed through such ignorance? One need but to glance through some medical history, such as that of the War of the Rebellion, to learn what havoc and devastation these invisible and unknown enemies made. Sabres, bullets, and cannonballs were trifles compared with them. More than three times as many soldiers fell victims to these impalpable foes during the war as were killed in battle. Fully one-sixth as many as were slain on the field died from surgical germ diseases alone, from the infection of their wounds by the myriads of the air. Now the surgeon knows that no atmosphere, whether that of mountain or sea, is absolutely free from putrefactive germs, and that the air of hospital wards and sick-rooms is particularly loaded with organic matter of all kinds, and with microbes in abundance. From these well-established facts has arisen what is known as the antiseptic treatment of wounds. Substances have been found which kill these germs, among the first and best of them carbolic acid; and now we have numberless germ-destroying agents. The modern surgeon gets rid of every microbe upon the surface of the part before operating, by shaving and thoroughly washing the skin with antiseptic solutions; every instrument, sponge, suture, and ligature is treated or saturated with them; his own hands and those of his assistants must go through a similar process of disinfection; the operating room is made as germ-proof as possible by causing each nook and corner and wall to be of such material and shape that they may be scrubbed down frequently with bactericides; often a spray of antiseptic vapor is played into the air above the wound during the operation; the towels, bandages, and dressings of cotton, lint, and gauze are all made similarly safe. Should he meet with the old and too familiar symptoms, the surgeon knows there must have been some flaw in the preparations. The bacteria still occasionally outwit him; but the contrast between the results of to-day and those of yesterday is marvellous. Aseptic surgery is of such recent origin, however, that there are still many surgeons, generally older men, and in the provincial districts, who either have no knowledge of the scientific facts, or who, bound fast by hereditary prejudices, profess to disbelieve in their truth, and continue to immolate fresh victims year after year upon the altar of their own ignorance. As regards operative procedures themselves, anæsthetics, antiseptics, improved methods of checking hemorrhage, and a variety of new instruments have made it possible, not only to undertake new operations and perfect old ones, but also to practise conservatism in surgery. Thus amputations are by no means so common as formerly, for limbs are preserved by different operative methods under these new conditions which before it was considered impossible to save. If there is anything, however, which serves to distinguish the surgery of this time from that of the past it is its visceral character. Then the operator busied himself chiefly with externals: outer tumors, the skin, limbs, and the like. Now his most brilliant work is among the organs contained in the cavities of the abdomen, chest, and head. No organ is beyond the reach of his knife. Pelvic organs are extirpated; large abdominal tumors, and such organs as the spleen, the kidney, and the larynx, are often successfully removed. Injuries to the intestines and the stomach are no longer considered as necessarily fatal, for they may be sewed up, parts cut out; and the ends approximated, very much like rubber hose. They are beginning to cut tubercles out of the lungs, and tumors are removed from regions in most dangerous proximity to the heart, the large blood vessels, and the great nerves. But most remarkable of all is the very recently developed surgery of the brain and spinal cord. This new departure is wholly owing to the wonderful advance made in the knowledge of the anatomy and physiology of the central nervous system. The surgeon depends upon the nerve specialist to localize the morbid process in the brain or spinal cord, and to determine the nature of the disorder, whether hemorrhage, tumor, abscess, or whatever it may be. It is a dangerous region, but the results are sufficiently successful to warrant operations where death is imminent without them. Quite lately operations have been carried out upon the brain itself in peculiar forms of insanity, and in cases of idiocy where the growth of the brain seems to be hampered by too early union of the bones of the skull. In the latter case the design is to remove sufficient bone to allow the brain to grow. As in every novel project or enterprise, time is necessary before judgment can be passed upon the experiment, so in these operations for insanity and idiocy their actual value cannot be determined for at least ten years from their performance. It is doubtful if much more can be done to perfect surgery as a science. Methods and technique may be improved, but there seems to be little territory left to explore. There is one direction, perhaps, in which further achievement is possible. As is well known, the surgeon usually takes away what is diseased or defective. The progress should be in the way of substitution. The transplantation of skin, hair, bone, and teeth, and the transfer of blood from one to another have been accomplished. We must now demand of him new eyes, new limbs, new internal organs, new hearts, and new brains in the place of those which have become so disordered as to require his supervision and manipulation.—*Sun.*

SLEEP.

WHAT OCCURS DURING ONE-THIRD OF OUR LIVES.

The condition in which we pass at least one-third of our lives is certainly one of the highest importance and interest, and it is, even with our present knowledge, not devoid of a certain amount of mystery. We know that in sleep the amount of blood circulating in the brain is considerably diminished, and it is undoubtedly the time when the waste of the nervous system is repaired, and a store of vital force—whatever that may be—laid up for the labors of the ensuing day. The profound influence which the state of slumber has upon the human system is evident to any one who has ever passed one or more nights without the presence of "tired Nature's sweet restorer;" and the feeling of strength, vigor, and well-being with which one awakens after a period of sound, dreamless sleep, shows that the restorative influence extends to every part of the body. The need of sleep is an imperative one, and, in many cases, is almost irresistible. Instance are on record of soldiers sleeping on horseback, or even in the midst of a battle, and many a sentry has been sentenced to death for sleeping at his post, who was in no way to blame for his neglect of duty, but was simply overcome by a demand of Nature which he was unable to resist, even at the peril of his life. Similar instances are known of railroad engineers and steamboat pilots sleeping when on duty, with the knowledge that the lives of many others, as well as their own, depended upon their wakefulness. The proper amount of sleep required by any one is an individual peculiarity, and no general rule can be given. The new-born infant sleeps nearly all the time, but the periods of wakefulness soon grow longer, through childhood and youth, until the full-grown adult devotes a minimum time to the recuperation of his bodily energies, while in old age the need of more time for sleep is again felt. The feelings are the best guide in this respect, and if one awakes completely refreshed after six hours of slumber, that amount is doubtless sufficient for his bodily needs, while another person may require nine or ten hours of each day to restore the balance of vital profit and loss. Nothing, however, can be worse than to regularly deprive one's self of needed sleep, in order to have more time for work or pleasure. This is like expending one's capital instead of the interest, and although the final result may be postponed, it can only end in physiological bankruptcy. The time of sleep is of no particular consequence, and is largely a matter of habit. The darkness and quiet of night naturally lead to repose, but large numbers of people must, necessarily, reverse the usual practice and devote the daylight hours to slumber. Neither is their any particular hygienic virtue in early rising. The familiar old couplet is only true in a very general sense, and there are a great many cases where a man would be healthier, wealthier, and wiser if he delayed the time of his rising to an hour consistent with his own feelings and inclinations. Dreams, undoubtedly, occur during disturbed sleep, or during the interval between sleeping and walking, and—although it is not easy to prove this—it is more than probable that a sound sleep is a dreamless one. Unusual mental anxiety or excitement, or a distributed state of the bodily organs, such as an overloaded stomach, may cause a certain activity of the mental processes, which will become manifest in dreams. The sudden awakening of a sleeper will often cause a dream in the brief interval before full consciousness is attained. Dreams more often relate to recent

and important occurrences in our daily life; but, on the contrary, the most trival incident, forgotten for many years, may be, as it were, stored up somewhere in the brain, to be afterwards revived in a dream, with all the accompanying circumstances. The literature and curiosities of sleep and dreams is, however, very extensive, and it would be impossible to refer to even a fractional part of the observed phenomena. A simple falling asleep, if it were not so common, would be a most wonderful and even an alarming occurrence. Although the vital processes of a sleeper go on as usual, yet the mental life, the self-consciousness is suspended, and the sleeper is practically dead to this world, or else wandering in another and stranger world—that of dream-land. A dreamer may be said to be in two places at once, and if, from any cause, he should not awake, but continue to dream on indefinitely, it would be hard to say why he would not be living just as true and real a life as the one which he knew in his waking hours. Hamlet's chief argument against suicide was that "In that sleep of death who knows what dreams may come?" and Bryant, in his poem Thanatopsis, speaks of welcoming the approach of death,

"Like one that wraps the drapery of his couch
About him, and lies down to pleasant dreams."

It is a noble, and perhaps the most logical conception we can form of the great and inevitable change that must come to us all, to consider it as but the awakening from the dream of our present life into a higher state of existence, with a comprehension of the laws governing the universe and our individual being, which shall lead us to look back upon the experiences of our present life as we now vaguely remember the visions of a disturbed slumber, and with as little regret that they have forever passed away.—*Popular Science News.*

WHOLESOME EXERCISE.

HOW PHYSICAL EXERCISE MAY PROMOTE HEALTH AND BEAUTY.

Few theories are carried to a more unwarranted extreme than that of the importance of physical exercise and muscular development. Because exercise improves health, and muscle is a fine thing to own, half-educated reformers preach exercise and muscle as if there could not be enough of them. Any plain-spoken physician will say at once that there can be too much exercise, and that unwise forms of exercise can be injurious. He will also say that there is very slight essential connection between muscle and that supreme physical quality, vitality. Many a man has developed muscle at the expense of vitality, and many a nervous temperament has impaired health by dragging itself through exercise when it needed rest. Muscle is all right in its proper place, but ahead of it come heart, lungs, brain, and stomach. Cultivating muscle does more for beauty, probably, than for health; and since beauty is really one of the proper objects of effort, the forms of exercise which bestow most symmetry of outline and grace of movement are to be studied. One of the women writers who deal out instruction to the sex has recently advocated running. She is nearer the right track than most of the didactic writers of her kind. Running is the great beautifier of figure and movement. Running gives muscular development, strong heart action, and free lung play. The muscle comes where it ought to be, the shoulders go back, the loins hold the trunk well balanced, and the feet take their correct positions. It was running which made the Greek figures. The more active tribes of American Indians have been runners from time immemorial, and from the chest to the heels they are much more beautifully built than the average of white men. Running people have usually the firm but elastic texture of flesh which is the beauty of flesh. We know infinitely more about taking care of the human body than Greeks or Indians, and if we would train our children to regular and wisely supervised running exercise, supplemented with other exercises for the hands, arms, and shoulders, we could surpass them in beauty and activity. A general adoption of such a system seems very far from likely, since we have none of the appropriate grounds or apparatus. The next best thing is walking, but most of us walk on our heels, and lift up the feet instead of springing forward with them and driving the body on with the back muscles of the legs. Fashionable people will pay high prices for grooms and riding-masters to go out and teach correct horseback movements, but whoever saw a man, woman, or child with an instructor in walking? Yet horseback riding is a trifle beside good walking in its effect either on health or on those qualities of figure and carriage which the whole world holds in high estimation. Gymnasium exercise is so easily overdone, and may be so injurious in some cases, that it is doubtful whether anybody should go in for the gymnasium strongly without the superintendence of a skilled physician in at least the early stages.

METROPOLITAN MILLIONAIRES.

MEN WHOSE FORTUNES ARE UNSUSPECTED UNTIL THEY DIE.

A writer in the *Boston Transcript* says about New York millionaires that in this metropolis "it is a matter of almost daily occurrence to read in the papers the obituary of some man heretofore unknown who has died and left millions of dollars to be fought over by dissatisfied heirs. The case of the late Daniel B. Fayerweather is one in point. Here was a man whom every one who knew him at all supposed to be well off, but not even his closest business associates believed him to be the possessor of such a fortune as his will proved to be his. Two millions of dollars in legacies to educational institutions—why, no one would expect a Vanderbilt to do that. But now up steps his widow and objects to the power given the executors and to the comparatively small amount that falls to her share. It seems to me that there ought to be some way of making a will so that there is no peg in it to hang a contest on. The late August Belmont provided for such a contingency by saying in his will "contestants will be disinherited." But then Mr. Belmont left an admirable will, one that no one would want to contest, his widow much less than any one else. Mr. Fayerweather it would seem leaves his will open to the same construction that has given so much trouble in the Tilden will—undue power to the executors. With the Tilden warning before him you would not expect a shrewed man of business to fall into the same error. Whether it is an error or not the law will have to prove, for Mrs. Fayerweather is going into the contest with all her might and main. There are plenty of Fayerweathers in New York. Take the residence portion of this city and look at the uncountable number of houses that can only be lived up to by the expenditure of from thirty to a hundred thousand dollars a year, and yet how few people know anything about the occupants. They come and go, make and spend, some, of course, die and leave nothing behind them, while others die and leave millions. Aside from the millionaires there must be an enormous wealthy class in this city. Look at the thousands of houses that rent from $2,500 to $10,000 a year. The question of rent is the most serious one with the bread-winner in this city. It is a mighty poor place that can be had here for $1,000 a year—never a house but a cramped and confined flat, with an electric apparatus to open the front door instead of a boy in buttons. I have seen houses that rent for $2,000 that I wouldn't live in, for they are only used for renting and are out of repair, and so plumbed that the tenants who had any regard for their health had the pipes cut off that came beyond the first story. I have seen flats on the Parc Monceau, one of the most fashionable and attractive parks of Paris, that rented for $400 a year, and I know of beautiful flats in London, with an up and down stairs, and facing Hyde Park, the most fashionable quarter of the city, that rent for $600. Once in a while one can strike a bargain in New York, if one wants to buy a house and the one who owns it wants to sell very badly, but that is the only way I can see for the poor and proud to get a decent home in the metropolis of the United States of America. The only remedy for the evil that I can suggest is for the whole of Manhattan Island, "that tongue of land," as Dr. Holmes felicitously expresses it, "that licks up the cream of the commerce of two continents," to be given over entirely to trade and let the dwelling part of the town be beyond the Harlem River, where there is plenty of room for spreading, and streets could be laid out with alleys in the rear, so that the ash-can and garbage barrel need no longer be the trade-mark of New York. All the bridges in the world will not serve the purpose. Our rivers are too wide and the bridges so high that they of necessity must be too long for ordinary crossing. In Paris one crosses the bridges that span the Seine without noticing that they are bridges, for he steps upon them from the level of the streets, and they are crossed in the twinkling of an eye.

ROUGH ON CORNS.—A German inventor proposes to make boots with stone soles. He mixes with a waterproof glue a suitable quantity of clean quartz sand, which is spread on the thin leather sole employed as a foundation. These quartz soles are said to be flexible and almost indestructible, while they enable the wearer to walk safely over slippery roads.

SINGULAR TEXTILES.—It has been discovered that glass is capable of being turned into fine cloth, which can be worn without the slightest discomfiture next to the skin. Cloth is now made of wood. Strips of fine grained timber are crushed between rollers, the filaments carded in the usual manner with textiles into parallel lines and spun into thread, from which the cloth is woven.

HE KNEW BETTER.—"Remember, boys" said the new teacher, who, being still new at the business, knew not what else to say to make an impression, "that in the bright lexicon of youth there's no such word as fail." After that he paused to observe the effect of the chestnut. After a few moments of very deep silence a red-headed boy from Boston raised his hand. "Well, what is it, Socrates?" asked the teacher. "I was merely going to suggest," replied the youngster, as he cleansed his spectacles with his handkerchief, "that if such is the case it would be advisable to write to the publishers of that lexicon and call their attention to the omission."

IMPORTANT WARNING.—Dr. William A. Hammond warns against overheated apartments. He says: "An overheated apartment always enervates its occupants. It is no uncommon thing to find rooms heated in winter by an underground furnace up to 90 deg. Fights and murders are more numerous in hot than cold weather, and the artificially heated air that rushes into our rooms, deprived as it is of its natural moisture by the baking it has undergone, is even more productive of vicious passions. It is no surprising circumstance, therefore, to find a woman who swelters all day in such a temperature, and adds to it at night by superfluous bed clothing, cross and disagreeable from little everyday troubles that would scarcely ruffle her temper if she kept her rooms at 65 deg., and opened her windows now and then."

ELECTRIFIED MILK.—The souring of milk in thunder storms has just received a scientific explanation at the hands of an Italian savant, Professor Tolomei. He has found that the passage of an electric current directly through milk, so far from souring it, actually keeps it sweet, so that it does not turn until the sixth to the ninth day; when, however, an electric current is passed over the surface of milk it soon becomes sour, and this the Professor attributes to the generation of ozone, since the souring is more rapid when the current passes silently than when it is discharged explosively. more ozone being generated by the former than by the latter method. The fact that the souring of milk can be retarded by so simple a procedure as the passage of an electric current may prove of practical value and offers a safer way of preserving milk than by the use of antiseptics.

MENU CARDS.

THEIR USE SUPERFLUOUS AT PRIVATE DINNER PARTIES.

The charm of a private dinner is simply that it is private. Why, then, allow its charm and sacredness to be destroyed by anything so obviously brought into existence by the people and for the people as the menu? A menu is a "bill of fare." The use of the French word is an affectation ; that language, however, lends itself to the cause of cooks as well as it does to that of courts. When the foreign word appears at the top of the card in place of the English one, the affectation continues through the list. Soup is *bouillon, consommé, purée, potage.* A common stew is *ragout.* One from meat or game or fish, already cooked, is *salmi.* Side dishes are *entrées.* A pie is *vol-au-vent* or *paté.* Besides, dishes are *à la* this or that, according to their preparation and ingredients. Thus are our dishes disguised. In adopting the masquerade we pay tribute to French cooking, which is at once the most delicate and economical, but we enlighten only a few in the fundamentals of gastronomy. The menu, then, is only the list of dishes to be served at any one meal ; its object is manifold—primarily it suggests, allows a choice, and expedites the business of feeding. It is of use when one pays; price can control one's choice and one's portion, hence the necessity for a variety being furnished by a servant of the public. It is in its place on a steamboat, at a hotel, in the restaurant or eating-house, and there it should remain. Its motto should be "Pro bono publico." For none of the reasons given, nor for any that can be imagined, should it be allowed to show its brazen face amid the flowers, cut glass, and silver of a home dinner. In using the menu the private dinner is reduced to the unflattering level of a free-lunch counter; whatever is on the list of both is given away to guests. It is acknowledged in æsthetics that the usefulness of a thing is the beginning of its beauty. As a menu serves no purpose at a private table, it cannot be regarded as a thing of beauty if found there. At a public table it is a guarantee of sufficiency and proficiency; no such occult demonstration need be given by the hostess in her own house. Her object is not a gorge, but a seasonable and reasonable repast. With the assistance of the cook she will give the best that the season and her purse affords, and the unlimited power of both does not justify her in allowing her table to groan with quantity, nor the guests to groan at the length of time required to serve it. What guest would have the courage to read over the menu under the smiling eye at the end of the table? Should one be so lacking in this first principle of etiquette, would he have the audacity to benefit by it—decline one course to eat subsequently double an amount of another? Or, should he read the bill of fare and, finding there few dishes to suit his taste, dare to rise and quit the table? "Who've studied this awful dinner question" know that the meal had best be a revelation. The gastronome who is not delighted by a surprise is yet to be born. The menu is no credential, no proof positive that the dinner as written will be the dinner eaten. It is subjected to the uncertainty that governs all things. A catastrophe may occur that will cause a hiatus unknown to the guest, but betrayed afterwards by the writing. I know of an instance in a well-managed household where something went wrong with the "pudding, wine sauce." Every time the menu was looked at the omitted dish caught the eye. What had happened to prevent the fulfilment of the promise given? The omission was not felt, as much had been already served and eaten and a variety of desserts followed, yet the wonder grew over the "want." If the menu is excluded from the table it yet has its place and use in a private house. It is much more important that your servants should be provided with one than that your guests should. It will save mishaps of many kinds in the domestic department. Fancy a dinner where the "bird" course was omitted through the forgetfulness of an excellent butler and his satellite. The host was unaware of the omission, but the hostess could scarcely conceal a look of blank amazement and dismay when she saw the small affairs, salt-cellars, etc., being removed, and the crumbs brushed away preparatory to the appearance of the dessert. Having implicit faith in her servant, she recognized the situation, knowing what contingencies—from the cat up—might cause the non-appearance of her delicacy. The future revealed the true reason ; the merry little songsters, "butchered to make a holiday," were discovered in the larder all intact, their bodies cold and stark and much reduced by the length of their flight through the kitchen. It is a good daily rule in families to have the bill of fare written and placed in the butler's pantry. It simplifies matters between he or she who waits and the cook. The proper dishes and plates can thus be prepared, and placed conveniently beforehand for the proper serving of the meal later. In the morning, when the housekeeper or housewife arranges her dinner, it gives very little additional trouble to write and place conspicuously in one appointed place the bill of fare for that day's dinner. In many homes it is the host's pleasure to overlook the table at the last moment, to relieve the wife of the responsibility in the serving of those things in which he is most interested, and of which he is the best judge—*i. e.*, the decanting of the wine, its proper temperature, the sharpening of the carving knife, etc. If such things are attended to previously, it saves worry and fault-finding. The latter duty is very necessary if it is the host's pleasure to carve. If the serving of any dishes depend on him, that he may do so properly and easily and judiciously, a menu should be placed beside him. By it he can forearm himself for his duties. Many shining lights in the social world do make use of the menu, establishing a precedent. Kings have had their heads chopped off, and others high in authority have likewise done many things one need not follow or emulate. A precedent is an excuse, not a reason. The trouble with most persons is that they are content to follow. They would rather do as some one else has done than exert their own minds. Whatever you do, do with your understanding. Among savages or civilized, the feast, banquet, or dinner is considered the highest testimonial of worth they can as fellow-men offer or accept. The invitation to "break bread" is a recognition of social equality ; the world can be polished off with other things, but the person who sits at your table is placed there out of respect ; he is present because he is individually wanted, and no higher compliment could be offered ; yet with all respect to one as a worthy barbarian or civilian one is considered first as a human being, as one whose hunger must be appeased, and whose appetite must be pleased and stimulated. The invitation is accepted on both counts. Why should the trust on the human side be accented? What is the use of a mind that cannot triumph over matter? The question arises as to how you would best keep green the memory of your feast—by the articles of food provided or by the delights of the reason. Some one will say, "You went there to dinner, what kind of a time did you have?" You produce the menu. Possibly the hostess lacked the divine spark, and the card bears testimony to the fact. Instead of a delicate and suggestive reference in handiwork to something, the season, guest, or dinner, you see the word menu in huge gilt and parti-colored letters strewn with something that sparkles and glitters. You hand it over in answer to the question, saying "It was all good." What a tumble for a hostess! She has made herself and her house beautiful, has bidden those the world holds high to meet you, has done all of that to cater to your mind ; yet, because the miserable piece of card-board remains, you are tempted to remember her by what she has provided for you as an animal. How would you best have the memory of your dinner kept green—by articles of food or by "reason and the flow of soul?" A bill of fare is a tribute to the cook, not to the hostess. Would you have it said, "More good things were eaten than said?" No excuse is needed for providing each guest with a souvenir. A card with a good sketch in water colors or in pen and ink, done on it possibly by the hostess or by some unknown or known artist, would be pleasing, and each guest would prize it. Why profane so lovely a thing with a list of articles from the butcher's, the baker's, and green-grocer's? The vulgarity of such a transformation is self-evident. If you can afford it, and your generous spirit pleases, bestow on each guest a souvenir of the occasion. I offer a suggestion—one evolved out of the wit of a clever young woman, and not in behalf of the autograph fiend either: It is that each guest shall write his or her name on the reverse of the card. The list would be a suitable reminder of the sitting down in peace at one table of men and women. It would really show what the hostess provided as a running accompaniment to what the person did below stairs. The motto preceding such a "bill" should be, "Good cheer, good wishes, good words."

WOMEN'S WORK.

SOME OCCUPATIONS IN WHICH MEN DO THE WORK OF WOMEN.

While it is true that women have to a great extent of late years taken to doing men's work, it is also true that some men do women's work. In California Chinese men are largely employed as domestic servants, and wherever Chinamen go they are chiefly employed in laundries. In many large laundries, where new shirts are done up, expert men are employed who make good wages. The reason why men are employed on new shirts is because the new shirts require more strength to iron them properly than shirts that have been previously laundered, and few women have the strength to do the work properly. In the State prisons men are commonly employed at laundry work, mainly on shirts. It is curious, by-the-way, how differently a Chinaman uses an iron from the method employed by women. When a woman uses an iron she begins with it at the right heat for use, and consequently it soon cools, and she consumes much time in changing her irons. The Chinaman, on the contrary, gets his iron very hot, much too hot for use. When he begins to use the iron he plunges it quickly into cold water. This cools the surface for a moment. The heat from the interior then begins to come to the surface, and continues to do so for some time, about as fast as it is cooled by use, so that the necessity for the frequent changing of irons is obviated. Worth, the man dress-maker of Paris, has counterparts in other countries. The largest producer of dress patterns for women in New York is a man, although his business has been for many years conducted in the name of his wife. The most expensive and best fitting dresses that women wear are tailor-made dresses which are made by men. The designs for new dresses are mostly made by men. The most expensive ladies' hats are made by men. The man milliner is proverbial. In the department of nursing, which is considered specially womens' work, many men are employed. Where patients are helpless, and require much lifting, it has been found necessary to procure strong men, because women are not equal to the hard labor. Sewing is especially women's work, but the very finest and best paid sewing is done by men in fancy tailoring. Since the introduction of the sewing machine the proportion of men sewers has increased in those branches where the work is heavy and requires strength for long hours of labor. Although cooking is regarded generally as women's work, the best paid cooks are men. In the great clubs, hotels, restaurants, and private houses where fine cooking is required, the best cooks are men. It is the men who have made cooking one of the fine arts. It is true, however, that the great artists in food

disdain to be called cooks, and are known as chefs, and they command salaries of which the average lawyer would be proud. House cleaning is looked upon as women's work, yet there are establishments that will clean a house from top to bottom and put it in order, and employ mostly men to do it. Boarding-house keeping is mostly women's business, but there are many large and successful boarding-houses in New York that are managed by men. Often they get two or three houses together, and the tendency of men in that business is to enlarge it so as to make these places approach the character of hotels. There are even men chamber-maids. On steamboats and steamships most of the chamber work is done by men. Even in large boarding-houses it has been found expedient to have men to do the chamber work.

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

February.

MEAT.—Beef, mutton, ham, kidneys, liver, venison, sausage, pork.

GAME AND POULTRY.—Grouse, hare, pigeon, chicken, duck, turkey, geese.

FISH.—Bass, cod, crabs, eels, carp, catfish, flounders, halibut, herring, lobsters, mackerel, mussels, oysters, perch, pike, rock-fish, salmon, smelt, white-fish.

VEGETABLES.—Artichokes, beets, beans, cabbage, carrots, celery, garlic, lettuce, onions, parsley, parsnips, potatoes, shallots, spinach, tomatoes, turnips.

FRUITS.—Apples, bananas, grapes and oranges.

PRACTICAL RECIPES.

MUTTON AND RICE SOUP.—Take one quart of mutton broth and put to it a cupful of rice, when it is half cooked add a teaspoonful of chopped mint. When done season with salt and pepper and serve with bits of toast.

POTATO CROQUETTES.—To one pint hot potatoes, mashed through a sieve and seasoned with salt, pepper, and onion, if desired, add an egg and a little hot milk or cream. Make into croquettes, and roll in egg and bread crumbs. Fry in lard.

SCOLLOPED POTATOES.—One quart potatoes parboiled and sliced. Add one pint milk and put in a dish in layers with butter, salt and pepper. Bake three-quarter of an hour in hot oven.

VEAL PATÉ.— Three pounds veal, chopped fine, three slices of salt pork, chopped fine, three slices of bread, crumbed fine, three eggs, one quart milk. Season with salt and pepper. Bake three hours.

EGGS AND TOMATOES.—Heat half a can of tomatoes, and season them with salt, pepper, a lump of butter, and a little sugar. Boil six eggs until they are hard. Cut some mediumly thick slices of bread, dip them in the tomatoes, and put them in a baking dish, then put on a layer of slices of egg, then some bits of butter, a little pepper and salt, then more bread dipped in tomatoes, and so on till the dish is full ; pour the remaining tomatoes over, sprinkle bread crumbs on the top and bake.

LIVER CROQUETTES.—Boil half a pound of calf's liver until nearly done, mince it very fine, add a high seasoning of salt, pepper, chopped onion, parsley, sage and sweet herbs. Mix together, bind with a beaten egg, form into croquettes, dip in crumbs and fry in boiling lard.

CELERY CROQUETTES.—Cut some of the white stalks of celery into even lengths and stew until tender in milk. Let them get cold. Make a batter of the milk in which the celery was stewed, with an egg, pepper and salt, and half a teaspoonful of baking powder and enough flour to make it the right consistency. Dip the celery in this and fry to a golden brown in very hot lard. Drain on coarse wrapping-paper, and serve hot as possible.

BLACK COFFEE.

A STIMULANT THAT IS NOT A DRAIN ON THE NERVOUS SYSTEM.

The custom which prevails in New Orleans, and generally through the South, of taking a cup of strong black coffee in the early morning, is an intelligent one. The people of those malarial regions have long since demonstrated the fact that the custom referred to is of great advantage as a prophylactic. The individual experience of the writer for five or six years past is strongly in favor of the taking of a liberal cup of black coffee without sugar or cream, sandwiched in between two glasses of hot water before rising every morning at least one hour before breakfast. The various secretions are stimulated ; the nervous force is aroused ; an hour later a hearty meal is enjoyed and the day's labor is commenced favorably, no matter how the duties of the day and night preceding may have drawn upon the physique. Another cup of coffee at four in the afternoon is sufficent to keep the energies unflagged for many hours thereafter. Taken in this manner the full effect is secured : the stimulant devotes itself strictly to business, none of it is lost, and if the proper diet be taken at the proper times between (and the ideal diet for those who make large drafts upon their nervous systems and expect to have them honored, is hot milk), and if the above regimen be followed and accompanied by at least eight hours of sleep out of every twenty-four, the capacity for work is almost unlimited. How many of our patients who are victims of disease are ever consulted as to whether they have been accustomed to the habitual use of coffee or not? Take for instance typhoid fever—a long siege of suffering—a rocked and wrecked nervous system, the chances largely in favor of the patient having been an habitual drinker of coffee, but whether so or not, the coffee is usually not given, though strongly indicated, for the reason that it sustains and supports weary, worn nerves ; aids digestion ; keeps the alimentary canal, which is swarming with germs and putrefactive material in a more or less antiseptic condition (it has been previously shown that coffee is peculiarly destructive to the *typhoid bacillus*); helps to gently open the sewers of the system, being as it is a diuretic, a stimulator of the bile flow and other secretions ; allays the sense of fatigue and lessens tissue waste ; braces up the heart's action and rises arterial tension. We all know that to prevent a chill nothing is superior to a cup of good, strong black coffee.—DR. I. N. LOVE.

A BLINDING HABIT.

THE PERNICIOUS EFFECTS ON THE EYES OF GUM-CHEWING.

A Pittsburgh *Dispatch* reporter had a chat with J. Diamond, the Sixth street optician, a day or two ago, which puts a new phase on the effects of the gum-chewing craze that has spread from one end of the land to the other ; and it is doubtful if as many of the belles and followers of the habit will continue their chewing after they learn of one of its most injurious effects. Mr. Diamond said : "Does gum-chewing hurt the eyes? Most certainly it does, and that is one reason why I am so antagonistic to it and denounce it. Not only myself, but every scientific optician will tell you the same thing. And it is this, with its attendant injurious effects, that makes the habit so repulsive. Only yesterday I had for treatment the case of a lady who came after eye-glasses, and I thought it was strange her eyes were in such bad shape, unless there was some other cause than mere failure on account of age, and it couldn't be on that account, because she was just in the vigor of life, and very handsome. So I knew there must be some other cause. I questioned her about her habits of living, and discovered that she had chewed gum from the time she was old enough to know what it was. Here was the cause without any further looking. Why, she had to take the highest power of glasses I had, and her sight was as bad as though she were eighty. The eye and the optic nerve are the most delicate organs we possess, and they can't be abused with impunity. The constant chewing of gum affects the nerves that lead from the spine to the optic nerves, and strains the latter until they are weak and give out. It is the same, to a degree, with tobacco-users ; but gum-chewing is worse, as its victims chew more constantly, and so keep up more irritation. I frequently have cases that are caused by this same habit. Many young ladies who continue the habit feel its effects, and I have a good many cases lately of very young girls with poor sight and weak eyes that, as I find by the use of my instruments, and from inquiry into the habits of the sufferers, arise from no other habit than that of gum-chewing. If you will notice, gum-chewers do not have the brilliancy in their eyes, the vivacious and full-of-life look ; their physiognomy looks pale and unhealthy. If this habit is kept up as a craze, of course the effect on the eyes will be more evident still, as there will be more cases. Yes, if the newspapers show it up, and disclose its injurious effects, they may break up the habit."

A NATION'S NEEDS.

AMERICA A GOOD CUSTOMER IN THE MARKETS OF THE WORLD.

The American market is a gigantic institution, and its business is in correspondence with its magnitude. In the consumption of food, clothing, tools, implements, and the innumerable et ceteras that constitute the bric-a-brac of comfort and luxury, we surpass all other countries according to the ratio of population. We figure on the statistical slate as less than one-twentieth of the world's inhabitants, but on the invoice of consumption we are placed as absorbing from one-quarter to one-half of the great staples of the world's production. In the matter of sugar, the American love for the granulated syrup is proverbial. The world's crop of sugar is placed at 5,114,620 tons, and of that enormous mass of prepared saccharine this country consumes 1,422,000 tons, 28 per cent. of the whole product of the planet. The coffee-pot of uncle Sam has a commercial history and an enormous absorbing capacity for the narcotic berry. The total production of the world's plantations foots up at 856,000 tons, and of this amount we swallow a decoction of 265,000 tons, or 30 per cent. of the product. Of what we wear as apparel and use in the millinery of home comfort, we figure high among the nations that wear clothes, and have evolutionized their wardrobe from the fig-leaf of the ancestral Adam. Our consumption of wool is more than a quarter of the world's known production, and if, as computed by some statisticians, we use 60,000,000 pounds of what the sheep's skin gives to man, our consumption of the whole would be nearly one third. Out of 11,421,000 bales of cotton, of 400 pounds each, we use 2,685,000, a little over one-quarter of the total. The india rubber product of the globe gives one-half of its output to the United States. We buy up more than half the tin dug out of the earth, and burn 40 per cent. of all the coal that finds its way from the mouth of a pit to the grate of a stove or the door of a furnace. The world's production of iron is 24,000,000 tons, and of that mineral product we consume 8,000,000 tons, or about a third. The steel industries of the world pay us the compliment of handing over of manufactured metal for American use 3.385,732 tons, out of a total product of 10,500,000 tons, being about a third of what

the Vulcans of the globe run out of their furnaces. In the use of copper we take about 50 per cent. and of lead a much larger proportion. The means of purchase and of appropriating so huge a slice of the world's loaf for the American consumer are traceable to many causes, material as well as economic; and every phase of politico-economics claims the honor of appetizing the American market. On that point men have an ample margin to disagree, but none dispute the historic fact that the invoice of the national market is the index of its capacity and prosperity.—*Western Tobacco Journal.*

THE WORLD OF WATER.

WHAT EXISTS AT THE BOTTOM OF THE SEA.

At the depth of about 3,500 feet waves are not felt. The temperature is the same, varying only a trifle from the ice of the north pole to the burning sun of the equator. A mile down the water has a pressure of over a ton to the square inch. If a box six feet square were filled with sea-water and allowed to evaporate under the sun, there would be two inches of salt left on the bottom. Taking the average depth of the ocean to be three miles, there would be a layer of pure salt 230 feet thick on the bed of the Atlantic. The water is colder at the bottom than at the surface. In many bays on the coast of Norway the water often freezes at the bottom before it does above. Waves are very deceptive. To look at them in a storm one would think the water travelled. The water stays in the same place, but the motion goes on. Sometimes in storms these waves are forty feet high and travel fifty miles an hour—more than twice as fast as the swiftest steamship. The distance from valley to valley is generally fifteen times the height, hence a wave five feet high will extend over seventy-five feet of water. The force of the sea dashing on Bell Rock is said to be seventeen tons for each square rod. Evaporation is a wonderful power in drawing the water from the sea. Every year a layer of the entire sea, fourteen feet thick, is taken up into the clouds. The winds bear their burdens into the land, and the water comes down in rain upon the fields, to flow back at last through rivers. The depth of the sea presents an interesting problem. If the Atlantic were lowered for 6,564 feet, the distance from shore to shore would be half as great, or 1,500 miles. If lowered a little more than three miles, say 19,680 feet, there would be a road of dry land from Newfoundland to Ireland. This is the plan on which the great Atlantic cables were laid. The Mediterranean is comparatively shallow. A drying up of 660 feet would leave three different seas, and Africa would be joined with Italy. The British Channel is more like a pond, which accounts for its choppy waves. It has been found difficult to get the correct soundings of the Atlantic. A midshipman of the navy overcame the difficulty, and a shot weighing thirty pounds carried down the line. A hole is bored through the sinker, through which a rode of iron is passed, moving easily back and forth. In the end of the bar a cup is dug out and the inside coated with lard. The bar is made fast to the line and a sling holds the shot on. When the bar, which extends below the ball, touches the earth, the sling unhooks and the shot slides off. The lard in the end of the bar holds some of the sand, or whatever may be on the bottom, and a drop shuts over the cup to keep the sand in. When the ground is reached a shock is felt, as if an electric current had passed through the line.—*Ocean.*

SEAWEED GLASS.—Seaweed is now made into a tough paper, which takes the place of window glass. When colored the effect is similar to stained or painted glass.

CHEAP ALUMINUM.—The production of metal aluminum by electrolysis at a cost little above that of tin is what some French chemists are sanguine of being able to accomplish.

HOT-HOUSE POISON.

WILL HANDLING FLOWERS DEVELOP BLOOD POISON?

The handling of cut flowers from the hot-house, according to the *Sun*, has within a fortnight developed among the assistants of several of the prominent florists cases of blood poisoning not unlike that which the men who handle hides down in the Swamp district are afflicted occasionally. Assistants who got their fingers pricked with the thorns of cut roses and other rough-stemmed flowers found that inflammation set in rapidly, with all the symptoms of mild blood poisoning. Physicians examined the hands of one of the florists and discovered that poisonous matter had been introduced into the blood through the wound made by the thorns, and drew from the patient the explanation that the only way in which he could account for the poison was that Paris green, and some other powders were used in the hot-houses to kill bugs and other vermin, and that some of the powder must have adhered to the flowers after they were cut and shipped to the city. It was reported that six assistants in one up-town florist's had been poisoned within the fortnight, and had been obliged to wear kid gloves to protect their hands. There were cases in other flower stores. The poisoning manifests itself by an eruption of pimples all over the hand. There is nothing dangerous about it, but it causes considerable inconvenience to the flower handlers, and it has caused the florists to adopt greater precaution to prevent the same thing happening to purchasers of flowers

BUSINESS NOTES.

VILLACABRAS.

A couple of years ago M. Branciard, a Frenchman, travelling through Spain, happened to stop at Villaconejos, a small township of the district of Chinchon, province of Madrid, and learned there of the existence of important mineral springs in the neighboring valley of Villacabras. Having taken samples of the water, he submitted them to the professor of chemistry of the University of Lyons, the eminent Dr. Crolas, who analyzed the same and pronounced the water a peerless purgative one. A company was started for the purchase of the springs and the sale of the water, and in a very short time Villacabras has become the most popular purgative water in France. After a careful analysis by the municipal laboratory of Paris the sale of this water was authorized in France by the government, and on a report of Prof. Brouardel, President of the Parisian Board of Health, it was endorsed and highly recommended by the "Académie de Médecine." The merits of this water were acknowledged shortly afterwards by the juries of the International Exhibitions of Paris, Nice, Bordeaux, and Toulon, where Villacabras was awarded gold medals and the great diploma of honor. Since, no less an authority on therapeutics than Professor Dujardin-Beaumeta has repeatedly recommended the use of Villacabras in his clinics at the "Hôpital Cochin" (see *Therapeutic Gazette* of January 15, 1890). In his lecture on the treatment of constipation, for instance, he says: "To the list of French waters, such as Montmirald Valqueyras, to the Hungarian purgative waters so widely known, has been added a newly discovered water, which is by far the most highly concentrated water known. It is a Spanish water, like Rubinat, exclusively *sulfated sodique*, but considerably stronger than Rubinat." (See *Bulletin Général de Thérapeutique*, April 15, 1890). In a communication to the Société Générale de Médecine his Excellency Mavrogény Pacha, head physician to the Sultan of Turkey, highly endorses the use of the water, and says: "I find it superior to all the German and Hungarian waters known as bitter waters, as its taste is not offensive, and it acts quite efficaciously under a small volume without disturbing the stomach or bowels." Since its introduction in this country the water has been prescribed by such medical authorities as Drs. Fordyce Barker, T. G. Thomas, W. T. Lusk, A. A. Smith, Leonard Weber, G. H. Wynkoop, W. B. Anderton, J. Williston Wright, C. S. Ward, and others, and has been highly recommended in clinical lectures to students. (See New York *Medical Journal*, August 30th, page 1: "Lectures on Pulmonary Diseases," by James R. Crook, M.D. See brochure on Rheumatism and Gout by F. LeRoy Satterlee, M.D., pages 46 and 75). Dr. Chandler, Dean of Columbia College, gives of the Villacabras water an analysis which shows that it owes its great superiority over other waters to the large quantity of sulphate of soda, a mild and non-irritating purgative, which it contains, there being in the crystallized condition 9340.5765 grains of sulphate of soda to a total of 9726.1416 grains of purgative salts in a U. S. gallon. Being highly concentrated, it acts very efficiently under a very small volume, does not gripe nor produce any binding after-effects, as the majority of purgative waters, and has no bitter taste or repulsive smell. We are indebted for the above information to various foreign medical periodicals, namely, to the *Moniteur de l'Hygiène Publique*, under the signature of Dr. Dupouy, and to the *Bulletin Général de Thérapeutique*, by the well-known Professors Léon LeFort, Potain and Regnauld. Our conclusion is the same as Dr. Chandler's, who says in his report of February 10, 1890, on the Villacabras water: "I am confident that the medical profession will find it very useful in cases where this kind of water is required."—*Journal of Balneology and Dietary.*

THE VICTOR PRESS.

We call attention to the advertisement of Geo. Ertel & Co., Quincy, Ill., in another column of this issue. That the Victor Press is one of the most perfect presses on the market is shown by the fact that Messrs. Ertel & Co. have the largest factory in the world devoted exclusively to the manufacture of Baling Presses. They offer to ship a press on trial to any point in the United States or Canada, to work against any other make, the party testing them to agree to buy the one doing the most and best work for the least money.

FOR INSOMNIA

Use Horsford's Acid Phosphate. Dr. O. E. Bingham, Elgin, Ill., says: "I have used it in my practice for the past ten years, and am well pleased with the result."

FOR DYSPEPSIA

Use Horsford's Acid Phosphate. Dr. F. H. Welty, Hamilton, Va., says: "I have tried frequently and always with most satisfactory results. Nothing is equal to it for treatment of dyspepsia and various complications resulting from disorders originating in the stomach. I consider it invaluable."

COVERED LIVES.—There are lots of people in this world who wear silks and velvets on top, with a carefully covered garment of sackcloth and ashes underneath.

ELECTRICITY WINS.—The Paris Gas Company is said to be the first of the important European gas companies that shows a visible decline distinctly due to the increase of electric lighting.

COPYING PRINT.—Printing can be copied on any paper of an absorbent nature by moistening the surface of the latter with a weak solution of acetate of iron, and using an ordinary copying press.

AMERICAN GLASS.—There are at least six plate glass manufacturing companies in the United States, who have an annual product of nearly 12 000,000 feet. This exceeds the entire production of Europe fifteen years ago.

SOCIAL OPPOSITES.—There are two things needed in these days: First, for rich men to find out how poor men live, and, second, for poor men to know how rich men work.—*Edward Atkinson.*

PIE IN THREE STYLES.—Here is the story of a susceptible reporter for the Chicago *Times*: "In a little town a few miles down the road on the Chicago, Burlington and Quincy, is a regular old-fashioned tavern. The dinning-room is most attractive, employing for waiters some half-dozen sweet, rosy cheeked country girls. How I admired one beauty I saw there—such a rosebud mouth, and what eyes and hair! When I was ready for dessert she came for my order. 'Pie or pudding?' she queried. 'Well, I asked, 'what kind of pie have you?' 'Oh, we've three kinds—open face, cross-bar, and kiver-top— all made uv apples.' Shades of all departed grace! And with such a face and form!"

TEA AND TEACUP.—A man who argues that one pound of tea makes 400 small or 300 ordinary size cups states his case as follows; Tea testers ordinarily use a silver 5-cent piece for weighing the exact quantity required for a cup. As there are about twenty-five 5-cent pieces to an ounce, and as there are sixteen ounces to a pound, it follows that one pound of tea will actually make 400 cups, according to the standard of strength ordinarily required by professional testers. The cups used for this purpose contain, however, one-fourth less than the average domestic teacups. It will therefore be seen that after making due allowance for the difference in the size of the cups the number will be very close to 300.

HOT SAND.—A writer in the *Nightingale* says: "The sand-bag is invaluable in the sick-room. Get some clean, fine sand; dry it thoroughly in a kettle on the stove. Make a bag of flannel about eight inches square, fill it with dry sand, sew the opening carefully, and cover the bag with cotton or linen. This will prevent the sand from sifting out, and will also enable you to heat the bag quickly by placing it in the oven or even on top of the stove. After once using this you will never again attempt to warm the feet or hands of a sick person with a bottle of hot water or a brick. The sand holds the heat for a long time, and the bag can be tucked up to the back without hurting the invalid. It is a good plan to make two or three of the bags and keep them on hand ready for use at any time when needed."

CLEVELAND'S
SUPERIOR
Baking
Powder.

The Official Reports of the
United States Government, 1889,
Canadian Government, 1889,
New Jersey Commission, 1889,
Ohio Food Commission, 1887,
prove that Cleveland's is
THE STRONGEST
of all the pure* cream of tartar baking powders.

*Ammonia or alum powders, whatever their strength, should be avoided as injurious.

Piso's Remedy for Catarrh is the Best, Easiest to Use, and Cheapest.
CATARRH
Sold by druggists or sent by mail. 50c. E. T. Hazeltine, Warren, Pa.



Maid for easy Housework

-Pearline. *Made* to save work and wear in all kinds of washing and cleaning. *Made* into a powder for your convenience. *Made* as cheap as pure soap for economy. *Made* harmless for all purposes for which soap is used. *What a friend*—a friend who did half your washing and cleaning and made the other half so easy that you did not get too tired to enjoy the time saved; besides made things last longer and look better. That's just what Pearline will do for you if you'll let it. On the back of each package you'll find how it will best befriend you. Every grocer keeps Pearline, and many of your friends use it—ask them about it.

Beware Peddlers and some unscrupulous grocers will tell you, "this is as good as" or "the same as Pearline." IT'S FALSE—Pearline is never peddled, and if your grocer sends you something in place of Pearline, do the honest thing—*send it back.*

180 JAMES PYLE, New York.

POPULATION OF JAPAN.—Official returns show that the population of Japan on December 31, 1889, was 40,072,020—20,249,336 males and 19,825,684 females who ocupied 7,840,572 houses.

SILENT CALL.—One of the latest inventions in connection with the electric light is a silent cab call. Several clubs and hotels in London have already been supplied with this useful commodity. Two lamps are suspended outside the building, one red and the other green, and by pressing a knob in the entrance hall one or other of the lamps can be lit at will. The red light calls a four wheeler, and the green a hansom.

ENORMOUS VINE.—The largest vineyard in the world—that of Senator Leland Stanford—is in Tehama County, Cal., and consists of 3,825 acres, or about 3,000,000 vines. California also has the smallest vineyard in the world—the one grape-vine in Santa Barbara County, which is seventy years old, has a diameter of one foot twelve inches from the ground, and whose branches cover an area of 12,000 feet. This one vine produces from 10,000 to 12,000 pounds of grapes.—*The Argonaut.*

ROYAL TIPPLES.—There are plenty of delicacies at the Queen's dinners, as a matter of course; and there is always an adequate number of elaborate made dishes, which Mr. Osborne termed "ongtreys," but there are also invariably some plain joints, both hot and cold. Prince Albert was always pleased to see a cold sirloin of roast beef on the sideboard. The Queen has throughout her life shown a marked preference for perfectly simple fare. Prince Albert and the late Duke of Cambridge greatly relished that good old-fashioned dish, roast sucking pig, served with prune sauce. The Queen has an immense cellar of wine at Windsor, and supplies are regularly sent from the Castle to Osborne and Balmoral. Champagne and claret are the wines in most constant use, but there is a splendid collection of Cabinet Rhine wines, some extraordinary old sherry—Wiliam IV drank no other wine—a great quantity of port, including nearly all the best vintages, and some of the finest imperial Tokay in the world. Prince Albert always drank a bumper of Tokay after dinner, but since his death it has seldom been seen at the Queen's table. Apollinaris water is much favored both by her Majesty and the Prince of Wales, and the Queen's favorite whiskey comes from the well-known Lochnager distillery on the Balmoral estate.

THE BEST HE COULD DO.—A western newspaper recently received the following answer from a person who was requested to act as subscription solicitor: "From a perusal of your sample copy I consider your paper to be a dicknailer of the first water; but, owing to the fact that the crops were a failure last year, and the blizzard in January wiped out the cattle, and that the population in this place is only two families and a water tank and one of the families is away at the hot springs, and the other one, which was only Jed Roach himself, is dead since December, and as, dear sir, I am going East, because I have no society except freight trains and telegraph messages, that do not stop as they pass by, I do not think it would pay me to make much of a boom for your paper here, even if you increased the commission and threw in a three-bladed pocket knife. You asked me to hand your letter to some other person in my town, provided I cannot work for you myself. I have no one to hand it to, but I will nail it on the water tank when I leave."

USES OF SOAPSTONE.—A writer has recently called attention to the unappreciated uses and preservative qualities of soapstone, a material, he says, which possesses what may be regarded as extraordinary qualities in withstanding atmospheric influences, those especially, which have so much to do with the corrosion of iron and steel; and, from experiments made, it is said that no other material is capable of taking hold of the fiber of iron and steel so readily and firmly as this. In China soapstone is largely used in preserving structures built of sandstone and other stones liable to crumble from the effect of the atmosphere; and the covering with powered soapstone in the form of paint, on some of the obelisks in that country, composed of stone liable to atmospheric deterioration, has been the means of preserving them intact for hundreds of years.

Fine Table Wines
From our Celebrated Orleans Vineyard.

Arpad Haraszthy & Co.

Producers of the
ECLIPSE
CHAMPAGNE,
530 Washington St.
SAN FRANCISCO.

GENERAL AGENCIES:
NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOSEPH R. PEEBLES' SONS CO., 73 West Fourth Street.
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.

THE N. Y. HAY EXCHANGE BULLETIN.

OFFICIAL REPORT OF THE HAY AND STRAW MARKET AT NEW YORK.

COMMISSION SALESMEN.

NOTICE.

These names are arranged alphabetically.

WM. AFFLECK & CO.,
Commission Merchants in
HAY AND STRAW,
Office No. 5,
N. Y. Hay Exchange Building.

J. ALSDORF,
Commission Dealer in
HAY AND STRAW,
33d Street and 11th Ave.,
NEW YORK.

E. A. DECKER. F. W. TOMPKINS.
DECKER & TOMPKINS,
Commission Merchants in
HAY, STRAW, GRAIN,
Office: 16 New York Hay Exchange Building.

L. S. DILLENBACK. T. O. PECK.
DILLENBACK & PECK,
MAIN OFFICE:
Room 0, N. Y. HAY EXCHANGE, N. Y. City.
STOREHOUSE AND BRANCH OFFICE:
101, 103 and 105 North 5th St.,
and 152 and 154 Berry St.,
Palmer's Dock. Brooklyn, E. D.

EDWIN B. DUSENBERRY,
COMMISSION MERCHANT,
And Wholesale Dealer in
HAY, STRAW AND GRAIN.
No. 1, N. Y. Hay Exchange, New York.

THOS. FONDA & CO.,
Commission Merchants
And Dealers in Hay, Straw, Grain and Country Produce,
13 & 14 N. Y. Hay Exchange Building.

N. A. FULLER,
COMMISSION MERCHANT IN
HAY AND STRAW,
33d Street and 11th Ave.,
NEW YORK.

THEO. P. HUFFMAN & CO.,
COMMISSION MERCHANTS
In Hay, Straw, Grain, Feed, &c.,
648 & 650 West 34th Street,
Bet. 11th & 12th Aves., N. Y.

H. B. Jenkins. F. S. Williams.
JENKINS & WILLIAMS.
COMMISSION MERCHANTS IN
HAY, STRAW AND GRAIN,
HAY EXCHANGE.

The N. Y. Hay Exchange is located at 601 W. 33d St., corner 11th Avenue.

Only the cards of members of the N. Y. Hay Exchange appear on this page.

RULES FOR GRADING HAY AND STRAW

As Adopted by the N. Y. Hay Exchange.

CHOICE OR PRIME HAY—Shall be pure timothy, properly cured, bright, natural color, sound and well baled. No. 1—Shall be timothy, not more than one-eighth (⅛) mixed with "red top" properly cured, bright natural color, sound and well baled. No. 2—Shall be timothy, not more than one-quarter (¼) mixed with red top and blue grass, properly cured, good color, sound and well baled. No. 3—Shall include all timothy not good enough for No. 2, proportionately mixed with blue grass, red top, and clover, sound and well baled. SHIPPING—Shall include all hay not good enough for other grades, and may be natural meadow, free from wild or bog grass, and must not contain over one-third (⅓) clover, sound and well baled. CLOVER MIXED—Shall include all hay containing not over two-third (⅔) clover, and one-third (⅓) timothy, properly cured, sound, and well baled. CLOVER—Shall be medium grown, properly cured, good color, sound, and well baled. NO GRADE OR REJECTED HAY—Shall include all hay badly cured, musty, stained, or in any way unsound.

No. 1. RYE STRAW—Shall be clean, bright, long Rye, in bundles, sound, well and securely baled. No. 2—Shall be long Rye, in bundles. sound, well and securely baled. SHORT RYE—Shall be clean, not bundled, sound, well and securely baled. OAT STRAW—Shall be clean, bright, sound, well and securely baled.

In the New York market bale-wood is weighed in without tare. In all other markets it is deducted.

These quotations for choice, No. 1 and No. 2 hay are for large bales. 5c. per cwt. less when in perpetual press bales.

The New York quotations are per cwt. At other points, per ton.

NEW YORK, Feb. 9, 1891.

The following are the market prices to-day at New York.

	Large Bales.	Small Bales.
Prime Hay	60c @	55c @ 60c
No. 1	55 @	55 @
No. 2	50 @	50 @
No. 3	45 @	45 @
Shipping	45 @	45 @
Clover mixed	45 @ 50	40 @ 50
Clover	40 @ 45	40 @ 45
Prime Rye Straw	85 @ 90	50 @ 55
No. 2 "	85 @	
Oat and Wheat	55 @ 65	45 @ 50

Receipts of hay, 30 per cent. below last week.

Receipts of hay rather light, and accumulated stock well cleaned up, but no improvement in prices.

Shipping and No. 2 Hay in small bales is in less demand than any time this season owing to the falling off of cattle shipments.

Rye Straw is weak at 90c., although most of the sales for the past week have been made at that figure. We know of a few instances where receivers have yielded to the pressure of the buyers to lower the price, and sold at 85c.

OSCAR KENT,
Commission Merchant,
HAY AND STRAW,
Room 20, New York Hay Exchange Building.
Personal attention guaranteed all consignments.

JOHN KERWIN & SON,
DIRECT RECEIVERS OF
HAY, GRAIN and GENERAL PRODUCE
DEPOT AND STOREHOUSES,
Palmer's Dock, Nos. 97 & 99 North Fifth Street,
BROOKLYN, N. Y.
SHIPPING ADDRESS, PALMER'S DOCK, BROOKLYN, N.Y
West Shore R. R., N. Y. C. & H. R. R. R., N. Y. L. E. & W. R. R., Pennsylvania R. R., D. L. & W. R. R., Lehigh Valley R. R., and connections.

W. J. OVEROCKER. PERRY HATCH.
OVEROCKER & HATCH,
Commission Merchants in
HAY, STRAW AND GRAIN,
33d Street & 11th Avenue, New York.
References: West Side Bank, New York City; Exchange Bank, Holly, N. Y.

Gilbert Plowman, NEW YORK. Spencer Billington, FORT HUNTER, N. Y.
PLOWMAN & BILLINGTON
COMMISSION MERCHANTS,
HAY, STRAW, GRAIN, &c.
No. 15 N. Y. Hay Exchange,
33d St. & 11th Ave., NEW YORK.

JAMES ROZELL & SON,
Commission Merchants and Wholesale Dealers in
HAY, STRAW, GRAIN AND COUNTRY PRODUCE.
N. Y. Hay Exchange, New York.

SKINNER, BLOOM & CO.,
Successors to Rogers, Skinner & Co.,
COMMISSION MERCHANTS
And Dealers in
Grain, Flour, Hay, Feed, Meal, &c.,
74 CORTLANDT STREET, - NEW YORK.
Barge GYPSIE, Foot Bridge St., Brooklyn.

H. SLINGERLAND,
Barges MERCHANT and HARVEST QUEEN
Foot of West 11th Street,
HAY AND STRAW.
Also, 33d and 35th Streets, and all Railroad terminals. Special facilities for lighterage free goods.

CHARLES F. SWAN,
Commission Merchant in
HAY, STRAW & GRAIN,
At all the Railroad Terminals in New York, Brooklyn, Jersey City, &c.
MAIN OFFICE,
108 BROAD ST., NEW YORK.

TITUS, WELLS & WILLETS,
Commission Merchants and Dealers in
HAY AND STRAW,
133 Roosevelt St.,
NEW YORK.

VAN ALSTYNE & CO.,
COMMISSION MERCHANTS.
SPECIALTIES:
HAY, STRAW & FLOUR,
Nos. 2 and 4 Stone St., New York.
Liberal advances made on consignments.

G. E. Van Vorst. James M. Hillery.
VAN VORST & CO.,
COMMISSION MERCHANTS,
HAY, STRAW AND GRAIN
N. Y. Hay Exchange, 33d St., & 11th Ave.
562 & 564 West 34th St., NEW YORK.

NOTICE.

These names are arranged alphabetically.

HOSMER, CRAMPTON & HAMMOND,

NO. 43 COMMERCIAL STREET,

BOSTON.

COMMISSION MERCHANTS,

HAY, STRAW, FLOUR & GRAIN.

E. B. HOSMER, G. W. CRAMPTON, BENJAMIN HAMMOND, A. L. ROBINSON.

BOSTON HAY AND STRAW MARKET.

Hay, choice to fancy in large bales	$14.00 to $15.00
Hay, choice to fancy, perpetual pressed bales	12.50 to 13.00
Hay, fair to good	11.00 to 12.50
Hay, poor to ordinary	9.00 to 11.00
Hay, Clover and Clover mixed	9.00 to 10.00
Hay, swale	8.00 to 9.00
Straw, Rye, good to prime	17.00 to 18.00
Straw, Oat	9.00 to 10.00

BOSTON, Feb. 7th, 1891.

Receipts for the week are 373 cars of hay and 29 cars of straw; corresponding week last year, 385 cars of hay and 40 cars of straw. The receipts continue large and in excess of demand. Market is weak and decidedly in buyers' favor. There are occasional cars that sell at our outside quotations, but such are exceptional.

Rye straw is quiet at quotations.



H. F. WILSON,
WIRE BALE TIES,
458 WEST 38th STREET, New York.

40 COUPON OFFERS
and our large Illustrated Catalogue of SCROLL SAWS, Tools, Designs, and 30 Cts. WORTH of *full size* SCROLL SAW DESIGNS, sent FREE for 10 Cts. in stamps to pay postage.
JOHN WILKINSON CO., 269 State St., Chicago.

HAMMOND'S
CELEBRATED
Calumet Oleomargarine

Strictly pure, cheap and healthful
Ask your grocer for it.
Put up in packages of all sizes, also prints and rolls.

C. H. HAMMOND CO.,
607 to 615 THE ROOKERY,
CHICAGO.

Also offices at Boston, South Omaha, Neb., and Hammond, Ind.

SWIFT'S
CHOICE
Chicago Dressed Beef
AND
MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,
UNION STOCK YARDS,
CHICAGO, ILLS.

PUBLICATIONS OF THE
ANALYST PUBLISHING CO.

THE AMERICAN ANALYST.
Weekly. Every Thursday. $1 per year.

THE ROOFER, TINNER AND SHEET-IRON WORKER.
Monthly. 15th each month, $1 per year.

THE LEATHER MANUFACTURER.
Monthly. 1st each month. $3 per year.

Reliable agents and representatives wanted everywhere on liberal terms. Address

ANALYST PUBLISHING CO.
19 PARK PLACE, NEW YORK.

NATURAL MINERAL PURGATIVE WATER.
From the Springs of
VILLACABRAS.
Prescribed by the Highest Medical Authorities.

Stronger effects than any other under smaller volume. No smell—no repulsive taste—no after-constipation—no gripes. As a daily laxative it can be taken either pure or mixed with milk, tea or broth.

Sold by all Good Druggists.

HARTSHORN'S SELF-ACTING SHADE ROLLERS

NOTICE SCRIPT NAME OF Stewart Hartshorn ON LABEL, AND GET THE GENUINE HARTSHORN



A HIGH-GRADE PIANO

AT A VERY MODERATE PRICE.

NEW DESIGNS. FANCY WOODS.

Terms Easy. + Monthly Instalments.

TWO, THREE AND FOUR PEDALS.

Catalogues, Prices, Terms, Etc., sent to any address.

EVERY PIANO WARRANTED 5 YEARS.

(Mention this Paper.)

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,

HOWARD STREET, BOSTON, MASS.

GOLD MEDAL, PARIS, 1878.



W. BAKER & CO.'S Breakfast Cocoa

from which the excess of oil has been removed,

Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

"BILLET"

are

Carefully Selected French Sardines, Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.

MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.

STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

BROMO SODA.

Useful in Nervous Headache, Sleeplessness, Excessive Study, Over Brainwork, Nervous Debility, Mania, Etc.

DOSE—A heaping teaspoonful in half a glass of water, to be repeated once after an interval of thirty minutes, if necessary. Each teaspoonful contains 30 grs. BROMIDE SODIUM and 1 gr. CAFFEIN,



SUPPLIED BY ALL DRUGGISTS

Ask for (Bromo-Soda, Warner & Co.) and take no other "Bromo."

LEA & PERRINS' SAUCE



In consequence of Imitations of LEA & PERRINS' SAUCE, which are calculated to deceive the public, LEA & PERRINS beg to draw attention to the fact that each bottle of the Original and Genuine

WORCESTERSHIRE SAUCE

bears their Signature thus—

Lea & Perrins

For Sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS, NEW YORK.

RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,
184 Greenwich St., N. Y.

BLAIR'S PILLS.



Great English Remedy for GOUT, RHEUMATISM and KIDNEY COMPLAINTS.

SURE, PROMPT and EFFECTIVE.

Large Box, 34; Small, 14 Pills.

At all Druggists, and

224 WILLIAM STREET, NEW YORK.

RIDGE'S FOOD The MOST RELIABLE FOOD For Infants & Invalids. Used everywhere. *Not a medicine*, but a steam-cooked *food*, suited to the weakest stomach. Pamphlet free. Woolrich & Co., (on every label), Palmer, Mass.

Pure LAGER BEER,

"IMPERIAL" and "CULMBACHER"

Brewed & Bottled SPECIALLY FOR HOTELS, CLUBS AND PRIVATE FAMILIES

BY

Beadleston & Woerz

291 W. 10th St. New York.

Orders by Postal Card promptly attended to.



C-U-R-E-S

DIARRHŒA, DYSENTERY,

MALARIA,

all ailments of the bowels. Is an anti dyspeptic, and a **DELICIOUS INVIGORATIVE.** Leading Physicians prescribe it for **ADULTS AND CHILDREN.** *FOR SALE* by Druggists and dealers.

RHEINSTROM BROS., DISTILLERS OF FINE LIQUEURS, 54, 56, 58, 60, 62 E. 3rd STREET, CINCINNATI, O.

ESTABLISHED IN LONDON, 1851.

DEAN'S PATENT Ardenter Mustard



W. G. DEAN & SON,
361 & 363 WASHINGTON STREET; 84, 86, & 88 NORTH MOORE STREET, N.Y.

We shall be glad to supply our readers with any periodical published at club rates.

Send us a postal naming periodical and we will quote you prices.

ANALYST PUBLISHING CO.,
19 Park Place,
New York.

Don't kick



because your business is bad, but advertise If you don't know how to, write to us and we will tell you.

We will prepare your advertisement or give you advice and assistance to aid you in preparing it yourself. We will have the advertisement set in type and procure illustrations if any are needed. When a satisfactory advertisement has been produced we will furnish proofs and an electrotyped pattern to be used in duplicating the advertisement if the display or illustration make an electrotype desirable.

Address GEO. P. ROWELL & CO.,
Newspaper Advertising Bureau,
10 Spruce St., N. Y.

DR. PRICE'S CREAM Baking Powder

Most Perfect Made

A Pure Cream of Tartar Powder—
Superior to every other known.
Used in Millions of Homes—40 Years the Standard.
Delicious Cake and Pastry, Light Flaky Biscuit, Griddle Cakes
Palatable and Wholesome.
No other baking powder does such work.

THE GREAT AMERICAN TEA COMPANY

LADIES

GET UP ORDERS.
Entire New Departure.
A HANDSOME PRESENT TO EVERY SUBSCRIBER.

THE GREATEST INDUCEMENTS EVER KNOWN TO INTRODUCE OUR NEW GOODS.

If you enjoy a cup of **Delicious Tea** send in your orders. 3½ lbs. Fine Tea by mail on receipt of $2 and this "ad". Beautiful premiums given away with $5 orders and upwards. The **most extraordinary bargains** ever offered, during the next thirty days. China Tea Sets and Lamps with $10, $15 and $20 orders to introduce our excellent **New Crop Teas.** Formosa and Amoy, Oolong, Congou, English Breakfast, Japan, Imperial, Young Hyson, Gunpowder, Sun Sun Chop and Mixed. Good mixed teas 20c. per lb. Headquarters in United States for Fine Teas. One pound of our tea will go farther than three pounds of trash. Thirty years' national reputation for selling **Pure Goods Only.**

THE GREAT AMERICAN TEA COMPANY,
P. O. BOX 289. 31 and 33 Vesey Street, New York.

Tabasco Pepper Sauce
OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced, by connoisseurs, to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY,
NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

GLENN'S SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,
C. N. CRITTENTON,
115 FULTON STREET,
NEW YORK.

THE LABORATORY.

To Inventors, Manufacturers and Applicants for Patents

The AMERICAN ANALYST may be consulted upon all matters involving theoretical or applied chemistry. Advice and opinions given. Analyses and assays made. Patents perfected and secured. Terms reasonable.
Address, AMERICAN ANALYST,
19 Park Place, N. Y.

Be progressive and keep abreast of the times. Avoid dyspepsia by using **Lard Compound** and **Cottolene,** a substitute for lard.

The highest medical authorities pronounce them healthful; and expert cooks commend them.

Our **Clairette** brand of cotton oil soap is the purest and best laundry soap in the market; as pleasant to the hands as genuine castile.

N. K. FAIRBANK & CO.,
CHICAGO AND ST. LOUIS.



AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 8. NEW YORK, THURSDAY, FEBRUARY 19, 1891. WHOLE No. 208

EXPERIMENT STATION
UNIVERSITY OF ILLINOIS

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - $1 per year.
Single Copies, - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.

Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.

Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,

H. LASSING, M. D., } *Editors.*
T. P. McELRATH, }

No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

Aerial Travel 88
Barometric Plants 89
Catering Science 86
Domestic Dietetics 89
Editorials 85
A Victual Show; Women's National Council; A Deplorable Situation; Gallic Gratitude.
Green Tea 89
Gun Cotton 88
Hay Market Official Bulletin 92
Women's Work 89

A VICTUAL SHOW.

The retail grocers of this community are about indulging in one of the characteristic splurges by means of which they periodically boom their business, individually as well as collectively, under the pretence of an overwhelming zeal for pure food. These emotional experiences were manifested for several years by so-called "National Conventions" in Washington, whose invariable result was to prevent the adoption by Congress of any really useful legislation on behalf of the consumer. The hollowness of such advertising shows was, however, too apparent, and next month we are to be entertained with a "Food and Health" exposition in this city, the profits of which are to be devoted to the erection of a club room of some sort for the entertainment of the wily sand-sprinkler and his unkempt but frolicksome subordinate. The management has shown laudable shrewdness by engaging as director of the enterprise Mr. A. B. De Freece, a gentleman who has displayed peculiar skill and aptitude in promoting and managing large public entertainments in this city in support of various charitable institutions; but any particular reason why the charitable impulse of the community should be concentrated just now on a broad scale upon the corner grocer is not immediately apparent. Instead of combining to build him a club house, it seems to us that the wisest action would be to organize a missionary movement for his conversion. The apparent impossibility of success should not prevent the experiment. Providence, we feel assured, would smile more benignly over the astounding spectacle of one reformed retail grocer than it can be expected to do over the erection of an Exchange building, where unregenerate adulterators may gather together to concoct in unison their lucrative and indigestible combinations. So much about the general purposes of the undertaking. Its special advertising opportunities are innocently exposed by the director, who has called attention through the daily press to the fact that there will be on exhibition designs for sanitary dwellings, water filters, water fittings, sanitary funiture, refrigerators, wall-paper, floor coverings, life-saving and health-saving devices, improved clothing materials and garments, displays of unprepared animal and vegetable substances used as food or in the preparation of food, prepared cereals, meals, flour, biscuits, breads, syrups, sugars; prepared animal substances used as food, products of the dairy, beverages of all kinds, new varieties of food, food for infants and invalids, articles and devices used in the cooking and preparation of food: cooking stoves, ranges, vessels for preserving food, barometers, etc. All of which, we may add, will be vastly edifying—to the exhibitors.

WOMEN'S NATIONAL COUNCIL.

There has been organized a national council of women intended to represent all the independent work done by women in the trades, professions, and philanthropy. The organization took its origin from the International Congress of Women three years ago. It is proposed to hold a meeting every three years, the next meeting to be held in Washington, February 22d to 25th. From February 19th to March 4th, special railroad rates can be obtained, in all territory east of the Mississippi River. The delegate or other man or woman intending to be present at some session of this congress will pay one full fare from her home, asking at the same time for a certificate of purchase. This certificate will, after signature by the Congress Committee entitle her to a return ticket at one-third the usual rate. The interests of Women's Clubs, will be represented at this Convention by Mrs. Ella Dietz Clymer, President of Sorosis, and Mrs. J. C. Croly (Jennie June), President of the New York Woman's Press Club; the religious work of women by Mrs. M. Louise Thomas, of New York, and Mrs. Emily L. Sherwood, of Washington, D. C., Mrs. Ann Garlin Spencer, of Providence, R. I., has been invited to prepare a paper for the session, which will be devoted to the consideration of the relations between various social reforms. Dr. Julia Holmes Smith, of Chicago, has been invited to represent the Queen Isabella Association.

A DEPLORABLE SITUATION.

The import duty on manufactures of mother-of-pearl was raised by the McKinley bill from thirty per cent. to forty per cent. ad valorem; consequently the subjoined description of distress among the school children of Vienna, where the mother-of-pearl industry is most extensively conducted, cannot be charged against that legislative enactment, though an effort has been made by some unscrupulous newspaper writers to do so. The statement is made that of 294 boys and 216 girls in a school in the Herzgasse, 70 boys and 42 girls are without shoes and 149 have no winter clothing Of 616 pupils in a girls' school 90 are without shoes and 112 without winter clothing. In a boys' school 102 pupils wear no shoes at all, or only wooden shoes, and 102 are without winter garments. In many other public schools, frequented by workingmen's children, the condition of affairs is not better. In the three schools mentioned 858 pupils receive their luncheons from the Central Society for Feeding Poor School Children, The luncheons consist of a plate of vegetables for each child. On holidays, which are numerous in Roman Catholic Austria, these children get no luncheons at all, because, as the Society's last report says, they can never get at home more than dry bread enough for their breakfasts and suppers. This extreme poverty, resulting mostly from the stagnation in the mother-of-pearl industries, has been rendered acutely painful by the unusual severity of the weather. Hundreds of shoeless and half-clothed children are obliged to wade daily through snow and slush to and from school. All the Vienna dailies are publishing appeals for help for the starving and freezing school-boys and school-girls.

GALLIC GRATITUDE.

The French Government is about to erect a monument to Jean Nicot, who introduced tobacco into France. Nicot, while Ambassador to Portugal in 1560, sent a package of tobacco seed to the queen, Catharine de Medici, in Paris. The weed throve so well in French soil that sixty years later Cardinal Richelieu found it worth his while to begin collecting the first French tobacco tax. In 1697 this tax was 40 sous on the hundred pounds. Shortly afterwards the annual product of the tax was some $50,000. In 1718 the right to the product of the tax was let out to the collector for $3,200,000. Between 1719 and 1730 the tax was not collected. It was reintroduced at the latter date, and in 1791 was again abolished. Napoleon I. in 1810 began collecting the tax by means of a Government monopoly. The first empire got some $8,000,000 annually from the tax, and in 1830 the product was

$9,000,000. In the following half century the tax grew to $48,000,000. Altogether, the tax has brought the French Government $1,800,000,000. No wonder that enthusiastic French smokers have suggested that the Government could well afford to commemorate in pure gold the fame of Nicot.

CATERING SCIENCE.

HOW THE FOUR HUNDRED ARE PROVIDED.

Catering is an art, so is cooking, but the relation between the two is that of architecture and building. Twenty-five years ago it was practised with difficulty. As an art it had no recognition; as a profession it lacked impetus, the general opinion being that a house had to be built especially for entertaining purposes, or the affair celebrated in a public hall or hotel. If a wedding was to take place the baker made the loaves of bread and cake, and neighboring cooks were borrowed by the bride's family to roast the game, poultry and joints, a month or a fortnight being consumed in the preparation of the wedding feast. Now that is all changed, and, by the present system, the work of a week is performed in one hour, and the family is spared all worry, care and vexation. New York caterers are the envy of their profession for the reason that they have access to the finest market in the world. There is absolutely nothing in the line of table luxuries, excepting perhaps the perishable fruits of South America and Southern Europe, which cannot be had in season in our markets. By means of cold storage transportation the delicacies of all countries are levied on and placed within the reach of the New York buyer with systematic regularity. With these unparalleled facilities in marketing, the question of mere refreshment is the last to be considered in giving an entertainment. People who live well, whether they are in society or not, know what is in season, and when they give an order for a spread very often make out their own menu. Then comes the all-important—to the caterer—question of time. Take for instance, a ladies' reception from 2 to 6. A very dainty tea can be served at $1 per guest, for the reason that very little will be eaten. People are too wise to spoil their appetite for dinner, and are content with an ice, coffee, or cup of bouillon. If, however, the hours are from 4 to 8 or 7 to 10 the guests will have their dinner appetites with them, and five times the quantity of food will be consumed. The greatest difficulty the caterer has to contend with is the incessant demand for novelties. Duplicates are undesirable and the repetitions will not be tolerated. Patronage exacts not only skill but originality and ingenuity. Each entertainer wishes to surpass the efforts of her neighbor, and, although the basis of every French sauce is truffles and onions, the cry is a new sauce. As I said, in former times only the people who lived in big houses pretended to give entertainments. The modern caterer is so superior to surroundings that a suit of three rooms in a mansion or a flat can be admirably arranged for a dance, a wedding or a dinner, and a barn-like studio converted into an ideal banquet-hall or ball-room. New York has miles of beautiful homes where it would be impossible to suggest improvement, and where the service of a meal is a positive delight to the caterer. There are other houses in which the dining-rooms are filled with fighting colors and antagonizing furniture, and the man who invades it must be careful to find out just how perfect it is in the estimation of the family before attempting to pull down an inquisitor in bronze, cover a convulsion in stained glass, or spread a drugget of soft charitable linen over the war-whoop design in the carpet. In other words, he must feel his way; but, given possession of the rooms, whether intended for a dining or a dance he is in a better position to score a success, both for the entertainer and himself, than if restricted. In the dining-room, of all other apartments, three things are essential—fresh air, space, and soft light. In a dark, crowded, overheated room the groundwork for dyspepsia is laid before the soup course. Eliminate some of the furniture so as to give the table room, brighten the corners with a palm or two, a branch of candles or a sconce, pull down some of the heavy hangings, substitute a bamboo portiere, or lighten the windows with white sash curtains, and the interior as once becomes roomy and inviting, and the spread appetizing. In serving a dinner for twelve or less, we generally use the family china and plate. People who can entertain that number at a course dinner have as a rule perfectly appointed closets. Often the furniture is magnificent. I could name many houses possessing gold services, including epergnes and candlesticks, but, oddly enough, they are rarely used on the table, serving merely as ornamentation for a buffet or cabinet. There is nothing finer than silver and white linen, and nothing is more universally used in the cultured and wealthy homes of New York. For the private dinner neither care nor expense is spared in preparing the menu. Often the demands for novelties are unreasonable. Not long ago a lady, particularly anxious to make her dinner party famous, wrote to me, "I want something that is not in the market." In the matter of decoration we are guided by the flowers that are to be used, and, whatever the color, arrange the shades of the candles, the favors, bonbons, ices, etc., to match. Much is written about colored table drapery, but white linen remains the standard. Occasionally at a wedding breakfast or supper the board is draped with lace, which is crumpled up, and posies of the bridal flower pinned in the folds. This is a pretty but very expensive fancy, for unless the lace is fine the effect is cheap, and if it is valuable there are the risks to be taken in the pinning, and also the service of liquid foods. Occasionally a tea or luncheon is spread on a bare mahogany table, but the mats needed to protect the polished wood produce a spotty effect, suggestive of a doll's banquet or children's party. While the flowers are less abundant than formerly, no table is considered finished without some decoration. Among the wealthiest people orchids are preferred. They are best displayed in a tall epergne. Flowers of decided perfume are avoided; they do not harmonize with the savory smell of roast birds or the aroma of coffee. For that reason care is taken in buying roses to choose the nephetos, pear, or some other variety that has been forced at the expense of fragrance. Ferns are always pretty on a dinner table. So are marguerites and jonquils, asters, tulips, marigold and sweet pea. Tall, feathery palms are most graceful, but the difficulty is to get a jardiniere or vase that will not obstruct the view. Menu cards are not used at a home dinner. At a stag assembly or banquet, where toasts are proposed, they are essential. The guest cards are general when there are honored guests or strangers in the company. The family monogram or crest, engraved in gold or silver letters, often appears above the name inscribed, and the date may or may not appear. Incidentally, favors are not in favor, except at cotillons. If touches of color are needed, some simple and inexpensive fancy form, in the shape of a miniature flower, hat or box, is selected and filled with crystallized or artificial flowers or both, the candies being inside, and a spray of violets fastened to the cover over the guest's name. To load a table with toilet articles, bric-à-brac or personal ornaments, is no longer the fashion. Any one can buy a paper-knife, cigarette-case, match-box or button-hook, which articles, however useful and admirable in their way, have absolutely no place on an elegant table. Fifteen years ago it took time to serve a spread. An order for the entertainment of 200 would require a week's notice. Now a New York caterer will fill such an order in one day, and serve a dinner of ten courses to ten or twenty guests on two hours' notice. I remember discussing this very question with a celebrated caterer of Paris, and when I told him that in New York a gentleman could order the banquet hall arranged for 200 on his way to business, and find everything in readiness by 7 o'clock for the reception of his guests, he said, "Oh, that's one of your American yarns; I understand it." As an illustration of the way a caterer works on short time and in small space, let me cite a case in Washington Square. A gentleman called Monday. He desired to entertain 200 young people at a Wednesday night dance. There were only three rooms on the floor, and I was told to make the best of them. A man was sent to the house to look over the field. This is his report: "Drawing-room, medium size; adjoining parlor, dark; dining-room beyond, small. First two, hard wood floors; will need waxing; range, too small. Remove all furniture and line walls with cotillon chairs. Curtains in both doorways to come down. Send vans, and have furniture men move all statuary into the corners of the room. Light is insufficient, and a lantern is needed on the turn of the staircase. Limit floral decorations to lambrequins of smilax or some airy, graceful festoons of rose-buds and foliage for the doorways. Open fireplaces, and fill with tropical plants." That day the services of a gas-fitter were secured, who designed a quaint iron fixture with small branches, each arm containing a rocket, into which the bowl of a princess lamp was fitted, the two fixtures or brackets being attached to the picture moulding. The iron was then gilded, the lamps were shaded with pink, and when lighted the whole floor was ablaze. At 4 o'clock Wednesday afternoon two furniture vans backed up to the house, and everything on the floor was moved out and the vans sent to the storage, to remain untouched. At 5 o'clock the canopy was put up, and the entrance lighted. At 6 o'clock the fireman put the kitchen in order, set up a gas range, and attached a plate heater. At 7 o'clock seventeen waiters arrived, each carrying a dress-suit case, and followed by the wagons and trucks containing the tables, chairs, supplies and table furniture. The dining-room was so small that it was necessary to stack the tables in piles of three, as fast as they were set, each table being spread for four guests, each pile representing a dozen covers. When the seventeen piles were stacked in that lofty old colonial dining-room, it was all the men could do to get the doors closed and get out. At 10 o'clock the cooks arrived and proceeded to prepare supper, all the dishes being ready to go in the oven or on the fire. The cellarman came half an hour later to cool the wine, and at 11.30 o'clock supper was served. It took the waiters seven minutes by actual timing to arrange the tables about the two parlors, seat the guests in the cotillon chairs, and get the first course out. The meal consumed about one hour, and the tables were removed in ten minutes and without any inconvenience to the company. This clearing-out process is largely a matter of individual system. Formerly each waiter carried a table out. Now they move in procession, man and table alternating, whether entering or leaving a room. By this method and a signal for a march, it is a very easy thing for the waiters to start from the dining-room or hall door with the little tables, quietly pushing the promenaders out of the drawing-room into the hall and have the parlors arranged for supper by the time they reach the point of starting. When an entertainment is continued after midnight, the house is not cleared till the following morning. The next day our wagons were at the door at 7 o'clock, and before our men had the goods out the men on the furniture vans were ready to carry the drawing-room and dining-room furniture in. When the family came down to breakfast the house was in regular order. In all orders over fifty the caterer supplies everything—the food, wines, table paraphernalia, chairs, dancing crash, etc. The wear and tear on the service is very large. The moment a piece of linen shows wear it is retired, and the smallest chip from a piece of china or glassware ends its usefulness. We figure on a loss by breakage of 10 per cent. on every order, and very often suffer 50 per cent. In bad weather our men meet with unavoidable accidents,

often falling on an icy sidewalk or area step and smashing whole sets of dishes. Sometimes there is a runaway, and whole supplies as well as table paraphernalia are lost. For out-of-town and country orders we expect to lose 15 per cent. of our ware in breakage; and then there are the special orders for picnics, coaching and yachting parties, where the profits do not begin to cover expenses. I don't think we had a single yachting order last summer that paid us. In one instance our losses were particularly heavy: we had three large hampers ready to go on board when the gang-plank gave way and every thing was thrown over. One case contained 300 pieces of silver. As in all accidents we had to stand the loss. In private houses we very rarely loose anything. Small tableware, like spoons, forks, sugar-tongs and salt-cups are very often missed, and invarably found in the garbage-box. Large pieces of plate and linen are easily traced. They have the name plainly inscribed and are consequently useless to anybody else. At public entertainments, where large companies are provided for, the breakage is enormous. The question of suppers has always been more or less of a problem to the hostess, and just now is undergoing analysis. While all subscribe to the hospitality of refreshment, the feeling prevails that a heavy meal is not desirable before midnight unless at a ball, and then only for the dancers. For the last year or two the spreads have been perceptibly lightened, delicate pates, salads and croquettes replacing game, scallops, and hot dishes. A new departure from the conventional supper-table was made by Mrs. W. K. Vanderbilt at her now famous musicales. Instead of serving her well-fed, amply dined guests a hearty meal she introduced novelties in light refreshments. Immediately after the programme, twenty-five waiters in evening dress circulated through the lower rooms carrying silver platters, on which they passed cups of bouillon, frou-frous, ramiquens—a delicate puff filled with foi gras—ices, small cakes, bonbons, bonbon frappe, orgeat glace, and champagne. The guests strolled about and the servants followed them, offering some of whatever delicacy they had on the platter, or awaiting their order. The old fashioned luncheon served at noon and which grew into a dinner is no longer in favor. To-day the breakfast is a real French breakfast served from 12 to 2, and made up of little relishes such as toast with cavier, anchovy, egg or sardine paste; a light entree such as chops, sweetbread, a bird or pate; salad, celery, croquettes; fruit, an ice or meringue, coffee and white wine. The great charm about these breakfasts is simplicity, both in the decoration and menu. With a wedding breakfast the greatest latitude is allowable. The most elaborate one of the year was that sent to Chicago for the wedding of Mr. Marshall Field's son, which cost the millionaire dry-goods merchant $125 a cover, and forty were served. The bridal table was made in a heart. Along the edge was an eighteen-inch ribbon of white satin, with a valance to match, over which fell a fringe of gold. On this narrow border the plates, glasses, forks and knives, etc., were placed, and the rest of the board was covered with a heart of lilies of the valley containing 5,000 flowers. In the field was a gold arrow, tied with red ribbons. At each plate was a cake-box of pale lilac satin tied with yellow, the bridal monogram being embroidered in violet. Mrs. Field's gold service was used, and the glass was the beautiful Rococo. The other tablets were long ones, draped with rich lace, crumpled up, and bunches of natural violets pinned in the folds. Breakfasts can be served at $5 a plate, although that price would not cover the wines. There is a tendency to increase the number of invitations to wedding breakfasts, but as a rule not one-third of the guests are seated. Where one thousand or more are entertained, buffet tables are spread in the halls and library or gallery, and the guests are served standing. Not unfrequently a special staff of waiters is assigned to the people on the staircase in order to refresh everybody at once before there is time to leave the house. This is a graceful compliment, and one that the men especially appreciate. Afternoon teas are served from 3 to 8, 4 to 7 being the most fashionable hours just now. Of all these afternoon entertainments the coming-out tea is the most elaborate, but even that is simpler than formerly in point of refreshment. No limit is placed on the decorations. Flowers are everywhere, in all the rooms and in the greatest profusion. As at the dancing party white canvas is laid, unless the carpets are light, in order to get the bright effect desired. In the dining-room more care is bestowed upon the arrangement of the table than upon the viands, the object being to guard against over-furnishing or overloading. In the collation now ordered sandwiches are served in variety; tea, chocolate, champagne punch, the latter in a service by itself; ices, bonbons, almonds and marrons. Coffee is not on the list, and even pates are rapidly disappearing. At the regular afternoons, tea and cakes, with champagne or claret punch, is quite sufficient. Heretofore fashion has shut out the sunlight. Now shades are raised to the top of the sash and the sunlight allowed to stream in through lace drapery at all morning weddings and breakfasts. On all tables where a light is required wax candles or princess lamps are preferred to gaslight. I neglected to say in connection with weddings that only one loaf of cake is boxed—the groom's, or black cake—the bride's white loaf having entirely disappeared. Nor is it any longer the fashion for the bride to cut the cake. Where the rooms are large it is the custom to have the bride's table set on a dais raised from six to eight inches above the others. It is the work of the caterer to look after the proper heating of the house, and very often he reserves the privilege of building a new fire to lessen the heat, or turning it off altogether, and putting hard coal or gas logs in the grate. Where a large company is invited very little heat will be needed on the parlor floor. At all dancing parties the steam or furnace heat is turned off entirely in the afternoon and the house thoroughly aired. If the rooms are lighted two hours before the time set for the entertainment they will be the right temperature when the dance begins. The comfort of the guests is the first duty of the hostess. It is a mistake to think that a caterer takes cooked supplies to his patrons and warms them over before serving. No such methods are employed. Vegetables, croquettes, pates, birds and roasts of all kinds are sent to the house in bake-pans or kettles, seasoned and garnished ready to go into the oven. Coffee, chocolate and tea are freshly made, so are sauces and salad. Bouillon and soups are readily canned and iced or heated for table; cakes and breads are ready, but biscuits are freshly made, if ordered, and all delicate desserts are specially prepared in the house of merriment. In consideration of all this hasty cooking the range is carefully studied by the chef, who would never think of trusting to the family servants for a fire. He not only builds a fresh fire—often cleaning the chimney or putting in new stove lining—but acquaints himself with the range even to the extent of trying the oven. If he has any suspicion of its baking qualities it is ignored and a gas range set up, with appliances for heating plates, etc. The cellarman who goes to the house to look after the wine will ice champagne in half an hour, although a day or two may be consumed in the work of siphoning and decanting the claret. In filling an order from 10 to 15 per cent. more provision is provided than the guest list calls for, in order to have a comfortable surplus. If we run short of anything in the city, fresh supplies are readily procured. Occasionally a parsimonious customer is encountered who orders for 150 and entertains 200. In that case the reputation of the caterer is at stake and the head waiter, alive to the situation, wires the firm for an extra supply. The host may see fit to hold us to the original agreement or estimate, in which case the caterer has the alternative of playing the agreeable or closing all further dealings. In the matter of cost various things are to be taken into consideration. Every fluctuation in the market has an effect and so has bad weather. Then there are rushes at the holidays and beginning of Lent, when it is almost impossible to fill late orders, for the reason that extra help is required, and the right kind not always available. One dollar a plate is about the minimum cost at which an entertainment can be furnished, and then the refreshments are of the simplest kind, including sandwiches, chocolate, and an ice or tea and cakes. There is not much difference in the expense of breakfasts and dinners, which vary from $5 to $125 a plate. Formerly fashion called for an estimate; now sketches are in demand. The caterer, who is at once decorator, draughtsman and artist, goes to the house, looks it over carefully, gets ideas from the suggestions of the family, makes pen and ink sketches showing how the various rooms in the house could be appointed, where the tables will be, and the movements of the servants, which are submitted for approval. Tables are carefully and minutely drawn and colored if the design is for a novelty, so that the hostess is able to see her dinner or tea a month before it occurs. It goes without saying that these sketches add to the bill of expense. I remember the lunch party Mrs. Gen. Butterfield gave in honor of Mrs. U. S. Grant, and the sleepless nights spent on the original designs. No two tables were alike. One represented a fan in which pink and green ribbons suggested the sticks stretched over a field of rosebuds and ferns; a second was a fleur de lis, a third a heart, another a three-leaf clover. A caterer never takes anything back. He has no use for it. Generally the family orders the remnants sent to the charity patronized, and if no such disposition is ordered we favor the Little Sisters of the Poor.

LOUIS SHERRY

YEAST BACILLI.—Yeast was discovered fifty years ago to be composed of minute oval particles endowed with life, and the recent bacilli investigations have again turned attention to the subject.

SANITARY ROPES.—Wire rope manufacturers say that the dread of insects and infection in ordinary rope has banished the latter almost entirely from the the household in favor of their own production.

TO PRESERVE COLORS.—Drapers and others showing window goods liable to lose color by fading, are advised to put yellow-colored glass in their windows, as the bleaching is caused by the white rays of the sun's light.

BOILED STARCH.—The digestibility of starch is greatly increased by prolonged cooking, says Dr. N. Butiagin, and since the ptyalin value of saliva is diminished by disease, starchy food for invalids should be well boiled, in his opinion, three or four times as long as ordinarily.

PIGEON DIPHTHERIA.—The French medical journals report another instance in which diphtheria appears to have been transmitted from pigeons to man. One of these birds died, and a veterinary surgeon found, *post-mortem*, that diphtheria had been the cause of death. From this bird its owner, his daughter and a child were infected.

PROTRACTED STUDY.—In the University of Coimbra, Portugal, fourteen years are now required to obtain the degree of M.D., six being spent in obtaining the ordinary education, three in a preliminary scientific course, and five in purely medical studies. Now the students complain because the final examination is conducted in Greek.

WISE JAPANESE.—No kissing ever occurs in Japan, except between husband and wife, not even between a mother and child, no shaking of hands in salutation. If one were to offer a kiss to a Japanese maiden she would probably think she were going to be bitten!

MINERAL WATER GERMS.—The examination of Vichy water in bottles, commenced in Germany by Reinl and in America by Ninges, has given alarming results, nearly all of the bottled mineral waters having been found to be charged with germs (*Progres Med.*—N. Y. Times). Temperature, pipes, pumps, etc., are elements of much influence on the number of germs in the bottled waters. It is recommended to modify the methods of bottling, to subject them to steaming, as well as the corks, just before the introduction of the water.

AERIAL TRAVEL.

LATEST PHASE OF THE SCIENCE of AIR NAVIGATION.

The sprightly Washington correspondent of the *Boston Transcript*, writing under date of January 31, says, and our readers may accept as much of it as they see fit: "Before long a line of air-ships will be running between Washington and Baltimore. These vessels, built to traverse the atmospheric route, will not be balloons of any sort, but will depend for their flotation in the air upon what are called aeroplanes. An aeroplane is a framework made so as to hold extended horizontally enormous sheets, one above the other, of canvas or other material. It is designed to imitate in its operation the soaring of a bird, as will presently be described. Beneath the aeroplane hangs the car for passengers, the entire apparatus being afloat; though on the Washington and Baltimore line the car will be connected with a wire below that runs from one city to the other. A current of electricity will pass along the wire, giving the propulsive force, just as in the case of the street-car with an overhead wire. Such is to be the first step in practical aerostation. To realize its importance as a new scientific departure, it must be understood first that the two great difficulties recognized as obstructing the progress of the art hitherto have been the problem of steering and the weight of the motor. The latter obstacle has seemed well-nigh insurmountable, inasmuch as, whether steam or stored electricity was used, the apparatus necessary to work the propelling fans was so heavy as to be a hopeless load. But, mark you! this sort of air-ship does not have to carry any motor at all, its fans being worked from a dynamo station at a distance, by means of an electric current passing along the wire referred to and up to the vessel by the two wires which connect it with the aforesaid wire that runs all the way from Baltimore to Washington. As for steering, the wire does that, the two connecting wires running along on trolleys, just like the street-car spoken of. In short, to be sure that it is all clear, there is the great aeroplane 200 feet from the ground, the passenger-car hanging beneath it, and two wires connecting the car with the Washington to Baltimore wire strung on earth-driven poles far beneath. Obviously, it should be explained next by what principle of mechanics this extraordinary contrivance called an aeroplane is expected to support itself and the car it carries. That is the whole point of the idea. Did you ever see a bird fly? How does it sustain itself in the air? By flapping its wings. Not so. The best flyer cannot sustain its own weight by flapping. It takes advantage of the buoyancy of the air-currents, which at great heights even, where the atmosphere is rarefied and therefore harder to float in, upholds the eagle and the frigate-bird, soaring for hours with unmoved pinions or poised aloft so motionless that a telescope can be trained upon them. And yet either of these birds, starting from the ground, is obliged to take a long run before being able to rise into the air. So it is with all big birds, while the small ones have to begin with violent flapping, which they cannot keep up more than briefly. When practicable, birds prefer to start their flight from a high perch, because gravity gives them a helping impulse. How is it that Hermann, the prestidigitator, is able to throw playing cards easily from the stage into the fourth gallery of the biggest theatre? Simply that the card, given a skilful impetus, is upborne by the air-currents. A toy kite is a still better illustration. Well, that is the entire notion of the aeroplane, which, with its great expanse of horizontal areas, is actually sustained by the currents of air. Suppose a case, easy to understand, of one of these air-ships on its way to Baltimore at a speed of fifty miles an hour, the day being absolutely calm. This means a fifty-mile current of air, of course, in effect. It opposes the progress of the vessel but very slightly, because the latter presents merely the edges of its planes to the breeze. The captain at the helm inclines the planes upward a trifle at the front, so that the powerful air-current is made to exercise its lifting power and keep the craft afloat. But whichever way the current comes the planes are governed accordingly. The wing planes on either side are slanted slightly upward, so that any tendency to tilt will develop greater pressure in that direction, and thus restore equilibrium. Two most important discoveries have recently been made in this connection: One by Professor Langley, secretary of the Smithsonian Institution, to the effect that the resistance offered by the atmosphere to such an aeroplane as that described is only one-fiftieth part of what has hitherto been supposed, implying that so much less motive force is necessary. The other is that the power of the propeller for producing speed in air is vastly greater than has up to this time been dreamed of. Intense interest is felt by Professor Langley in the problem of aerial navigation, and in his investigations of the subject he is being assisted by J. Elfreth Watkins, the well-known expert in engineering and the science of transportation. In truth the matter is being taken up to a surprising extent nowadays by practical engineers. The foremost advocate of the practicability of the idea, Professor Octave Chanute, is to be next president of the American Society of Engineers, his name appearing on all four of the election tickets. And yet, only ten years ago, a man who had the temerity to so much as deliver a serious lecture on the prospects of navigating the air would have ruined his professional reputation by the indiscretion. A short time ago there was much talk in the newspapers about an Illinois company that promised to run aluminum air-ships between New York and Chicago, carrying passengers from one city to the other in six hours. The first ship was advertised to start by the first of January, but the scheme has failed to materialize thus far, and it seems to have developed some symptoms of a fizzle, though it is claimed that the fault is that of contractors who did not supply certain materials as quickly as had been agreed. There is great excitement in the district round about Mt. Carmel, where the building of the ships is going on secretly under sheds; but not so much as a car has been put together yet, and it is reported that difficulty is being experienced in soldering the aluminum. Well, one would rather smile; for the fact is that no one has yet discovered a successful method of soldering aluminum, and it is not all unlikely that no one ever will. Of course, aluminum is being employed for its lightness; but if it has to be riveted instead of soldered, it will have to be so thick that the object aimed at will be lost. Largely on account of this matter of soldering, it looks at present as if the possibilities of aluminum were as yet rather limited after all. This question of aerial navigation is the last transportation problem remaining for man to solve; the doubt is no longer whether he will solve it, but how. Science is now for the first time applying its serious attention to the subject. It is apt to be thus with great inventions. First they are imagined without especial design by dreamers; next the more imaginative inventors try to carry them out, and finally men skilled in mechanics reduce them to concrete form. Be it understood incidentally that no company has actually been formed as yet for establishing a line of air-ships between Washington and Baltimore; but people here who understand more about the flying question than is comprehended anywhere else—for this is a centre of investigation of the subject—are firm in their conviction that there will be such a line as that described at the beginning of this article before ten more years have gone by. It is not asserted that the attached wire plan is the best possible, but merely that it is likely to be the first step, the immense point in its favor being that it solves the steering difficulty at once and does away with the necessity of carrying a motor. Presumably the aeroplane and its car would have to be started from a height. Most inventors of flying machines find this essential. For example, a funny old duffer from New England came to Washington not long ago for the purpose of securing a patent on an apparatus for volitation of his own design. To convince the skeptical patent examiners that his machine would really work, he equipped himself with it and calmly and confidently flew off from the high abutment alongside of the Patent Office steps. He only flew as far as the pavement below, however, damaging his nose very much and bruising himself rather badly, for the fall was twenty feet or more. Theorists in aerial navigation are at present divided into two schools—the aeronauts who believe in balloons for purposes of support, and the "aviators," from the Latin avis, a bird, who reject the balloon altogether and advocate mechanical means, in imitation of winged creatures. The aviators may be said to be again divided into three classes—the flappers, who think that the flapping motion of wings should be imitated mechanically; the screw lifters who are of the opinion that propeller-shaped fans should be employed for raising the contrivance in the air as well as for propulsion; and the believers in the aeroplane principle, with propellers for go-ahead motion. The aviators declare that the gas-bag must go; it is unscientific, unmanageable, and not to be relied upon. And yet the aeronauts assert with truth that cigar-shaped balloons can be run now on a calm day in any desired direction, by means of propellers, at the rate of fourteen miles an hour. In fact, the thing has been repeatedly done. They say that a speed of from twenty-five to thirty miles is within sight. But the aviators reply that, though this may be true, yet such improved balloons could not carry many passengers or much cargo, nor could they go up at all on unpleasant days; in short, resort must be had to another form of apparatus altogether for real practicability. It is worth mentioning, by the way, that wonderfully clever mechanical birds, which actually will fly quite a distance, have been made in France; but their principles do not seem applicable to flying machines on a large scale. The motive power utilized in those toys is twisted india-rubber, which has more power, weight for weight, than the finest steel spring. It is a comfort to know that the faster the aeroplane air-ship travels the more easily it is upheld, though there would seem to be some danger of a spill occasionally, caused by an unexpected cross-current or by a slight unsteadiness on the part of the steersman. Such an accident, occurring at even fifty miles an hour, and an elevation of 200 feet or so above the ground, would be apt to be unpleasant. However, what is the use of accident insurance if one cannot take risks in travelling? Indeed, the speed attained is practically indefinite, depending merely upon the size of the fans and the rate at which they are made to revolve. In order to sustain the considerable weights necessary to be carried, the aeroplane and car will be obliged to traverse space at a rate far exceeding the flight of the fastest birds, and a journey across the continent will be accomplished in scarcely more than a few consecutive twinklings.

GUN COTTON.

THE SAFEST EXPLOSIVE WHEN PROPERLY HANDLED.

Gun cotton, said Professor Munroe, in a lecture at the Lowell Institute, recently, is pure cotton dipped in a mixture of pure nitric and sulphuric acids. In seeking a method by which these ingredients might be obtained absolutely pure, and the cotton thoroughly treated with the acids, many years have been spent and serious accidents have occurred. According to the Boston *Journal of Commerce*, the lecturer traced the experiments with the explosive from its discovery, in 1832, up to the present time, and spoke of several of the most fatal explosions which attended the experimental stage. After experiments by Professor Hill, of the United States torpedo station, gun cotton was adopted as an explosive for use in the navy in 1884. In preparing it for this service the gun cotton is, by successive pressings by hydraulic presses, the last of which has a pressure of 6,800 pounds to the square inch, made into little blocks measuring 2½ inches each way. It now

contains from 10 to 16 per cent. of water, but when issued to the service contains 35 per cent. Before being made up into blocks it is carefully tested. Professor Munroe declared that gun cotton, correctly prepared and handled according to directions, was the safest of the explosives to use. It was dangerous only when the materials had not been thoroughly purified, or the union of acid and cotton incomplete. In proof of what could be done with it, a picture was thrown upon the screen showing the workman cutting it with chisel, jig saw and lathe to fit it into a shell. Another illustration was the extinguishing of a block that was burning by pouring water upon it. Two thousand pounds of it had been burned in a bonfire without an explosion. One volume of the explosive gives 829 of the gas, and the pressure developed by combustion is eighty-one tons to the square inch, and by detonation 157.5 tons, the latter being in contact, however. The effect of the explosion of one particle on another is so rapid that it would take only one second for it to pass through 19,000 feet of the explosive. It was shown by the stereopticon that the letters U. S. N., with the date of manufacture, that are on the bottom of each block, are impressed upon an iron plate upon which the gun cotton may be exploded. It is a curious fact that, if the marks on the block are in relief, the reproduction on the iron will be raised, and, if cut in, there will be an indentation on the plate. Professor Munroe's theory is that when the letters are cut into the explosive the gases generated in the indentations are hurled from them as a projectile from a gun. If a leaf or a delicate piece of lace be laid between the gun cotton and the iron, its impress will be left in all the perfection of outline of the original, though the article itself is absolutely annihilated.

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

February.

MEAT.—Beef, mutton, ham, kidneys, liver, venison, sausage, pork.

GAME AND POULTRY.—Grouse, hare, pigeon, chicken, duck, turkey, geese.

FISH.—Bass, cod, crabs, eels, carp, catfish, flounders, halibut, herring, lobsters, mackerel, mussels, oysters, perch, pike, rock-fish, salmon, smelt, white-fish.

VEGETABLES.—Artichokes, beets, beans, cabbage, carrots, celery, garlic, lettuce, onions, parsley, parsnips, potatoes, shallots, spinach, tomatoes, turnips.

FRUITS.—Apples, bananas, grapes and oranges.

PRACTICAL RECIPES.

TOMATO PUREE.—Put two cans of tomatoes in a saucepan with a quart of hot water and seasonings of half a teaspoon of salt, a little onion, a pinch of cayenne, eight whole peppers, four cloves, a bit of mace, and let it simmer for half an hour, being careful that it does not burn. Then pass it through a fine colander or sieve. Wet half a teaspoon of flour with a quarter of a cup of cold water, rub smooth, fill the cup by tablespoonfuls with the tomato and pour it into the soup; taste for seasoning, simmer a moment, and you have a rich, thick soup, which may be thinned out with more water if necessary.

CHEESE OMELET.—Beat three eggs, add to them a tablespoonful of grated Parmesan cheese, pour into a hot pan; fry and fold in the usual manner. Just before folding add a heaping tablespoonful more of cheese and turn out on the hot dish. Dust a little Parmesan on top and serve.

OYSTER PIE.—Line a pie-plate with a good crust. Remove the tough part from twenty-five good-sized oysters, and put them in the dish, sprinkling through them salt, pepper, cayenne, powdered mace, and bits of a small sweetbread that has been cooked; sprinkle in a few fine bread crumbs. Add to the oyster liquor a little milk and a lump of butter, thicken it slightly with flour, and pour over the oysters; cover with a crust and bake.

CARAWAY SEED CAKES.—One cupful butter, one cupful sugar, five eggs, two teaspoonfuls baking powder, one quart flour, caraway seeds, and enough milk to make it just soft enough to roll out; cut into cakes with a cutter and bake a light brown.

CARAMEL CUSTARD.—Melt some pulverized sugar in a mould; brown, but do not burn it; take it from the stove and run the caramel all over the mould, and then fill up with a rich custard made of the yolks of ten eggs and two cupfuls of rich milk or cream, sweetened and flavored. Steam gently for not quite three-quarters of an hour and serve cold.

SPONGE-CAKE PUDDING.—Cream together half a pound of sugar and quarter of a pound of butter; add to this four well-beaten eggs, a pint of cream, and enough stale sponge-cake crumbs to make it rather thick; add a little baking powder and bake in individual pans.

WAFFLES.—Three eggs, two heaping cupfuls flour, two cupfuls milk, one-quarter pound of butter, one-quarter yeast cake. Let them rise over-night; bake in hot irons.

WOMEN'S WORK.

WHAT SOME KANSAS WOMEN ARE CREDITED WITH ACCOMPLISHING.

According to a writer in the Lawrence, Kansas, *Star*, the young Kansas farmer goes out into the field at daylight, and by nightfall has cribbbed 150 bushels of corn. The young man's sister can play the piano, do the housework, and in busiest times goes out with the men, and does so much work as to astound her best friends. A pretty Dickinson county girl, aged 15, drove a self-binder over 1,200 acres, and took good care of the four horses hitched to the machine. During the spring she helped to plant 120 acres of corn, did the housework for a family of seven, went to ten dances, tried twice to elope, taught the most interesting class in the Sunday school, and now talks of going to Africa as a missionary, and says, if the Lord speaks out loud enough she will go among the lepers. A Brown county girl looked after her father's grape patch of ten acres, picked the apples on 1,000 trees, and when her male parent pocketed $5,000 from the sale of the fruit did not ask for any of the money—because she knew she wouldn't get a penny. She believes in the Alliance principles, can play tennis, row a boat, or ride the wildest horse in the county. Another young woman living in Irving township worked in the harvest field as well as a man, herded cattle and sheep for several summers, and this winter will teach school. She has three young sisters, who are following in her footsteps. The bright daughter of a "squaw" man on the reservation wants a white husband—and she is worthy of one. Her sister married an Indian, and her father gave them a farm and a curse. He thinks the unmarried one is too good for an Indian. She has taught school, driven race-horses and won, has never been beaten in a trade, equals any man in the county in fleetness of foot, can shoot with the best of them, and would work her hands off for her parents' sake. A Lincoln county girl got her father to give her a farm and lives on it, looking after eighty acres without help, and last year cleared $1,000 besides buying clothes, machinery, and stock. This year she has a girl friend for a companion and a hired man. A woman sixty years old has farmed near Notawaka with continuous success. Her place is small, yet she makes money, and gives liberally to the needy. She never leaves her farm except to attend the meetings of a woman's suffrage society. A Hiawatha woman, who has a husband helpless from rheumatism, has kept him and a large family of children by directing work on an eighty-acre farm. She is a zealous worker in church and Sunday school, and says she owes no one a cent. Her farm and buildings are in better shape than those of her more fortunate neighbors. There are hundreds of bright women and girls who have taken up claims in the western part of the State who manage to keep men depending on them from going hungry; there are hundreds of women who can do anything a man can do, has ever done, or ever tried to do, and there are hundreds of women in Kansas who want equal rights with men. The signs are that what they ask will be conceded them. They have taken charge of the public schools, and no State in the Union has better. They are members of the school boards, county and city superintendents and teachers. They lead in the education and prohibition movements. They are making no noisy or threatening clamor for equal rights. They are simply showing by what they do that they are the equal of man, and that the ballot in their hands would not only be safe but wisely used for the development of a State that is coming to the front with greater strides than any other in the Union.

BAROMETRIC PLANTS.

WEATHER PREDICTIONS IN THE VEGETABLE KINGDOM.

The *Petit Traité de Meteorologie Agricole*, by Mr. Cana, contains a list of prognostics *apropos* of the aspect than certain plants present according to the state of the atmosphere. The following are a few examples: If the head of the gith (*Nigalla sativa*) droops, it will be warm; if the head of the same plant stands upright, it will be cool; if the stalks of clover and other leguminous plants stand upright, there will be rain; if the leaf of the wood sorrel turns up, it is a sign of a storm; if the leaf of the whitlow grass slowly bends up, there will be a storm; if the flower of the convolvulus closes, it will rain; if the flower of the pimpernel closes, it will rain; if the flower of the hibiscus closes, it will rain; if the flower of the sorrel opens it will be fine weather; if the flower of the same plant closes, it will rain; if the flowers of the carline thistle close, there will be a storm; if the flower of the lettuce expands, it will rain; if the flower of the small bind-weed closes, look out for rain; if the pitcher plant turns upside down, it will rain; but, if it stands erect, it will be fine weather; if the flower of the cinque foil expands, there will be rain; but, if it closes, the weather will be fair; if the flowers of the African marigold close, it will rain; if the scales of the teasel become close pressed against each other, it will rain.

GREEN TEA.

THE VARIOUS KINDS KNOWN IN COMMERCE.

For commercial designation, there are five subvarieties of green teas, known as Gunpowder, Imperial, Hyson, Young Hyson, and Twankay or Hyson Skin. Gunpowder takes its name from its small, firm, kernel-like form. The three chops or gatherings are also the means of further subdivision, the first being the smallest and most delicately flavored; the second is larger in size and not quite as hard rolled, while the third is looser in make, irregular in form, and with markedly less strength and perfection of flavor. The latter, with the older and coarser leaves of the other chops, is largely made into Imperial, which is known to the Chinese by the name of Big Gunpowder, and differs from its less bulky namesake principally in the size of the leaves, and but slightly in flavor. Its name is due to the fact that it is the make of the tea used in

Indigestion

Horsford's Acid Phosphate.

A preparation of phosphoric acid and the phosphates required for perfect digestion. It promotes digestion without injury, and thereby relieves those diseases arising from a disordered stomach.

Dr. E. J. WILLIAMSON, St. Louis, Mo., says: "Marked beneficial results in imperfect digestion."

Dr. W. W. SCOFIELD, Dalton, Mass., says: "It promotes digestion and overcomes acid stomach."

Dr. F. G. MCGAVOCK, McGavock, Ark., says: "It acts beneficially in obstinate indigestion."

Descriptive pamphlet free.

RUMFORD CHEMICAL WORKS,
PROVIDENCE, R. I.

BEWARE OF SUBSTITUTES AND IMITATIONS.

Caution:—Be sure the word "Horsford's" is *printed* on the label. All others are spurious. Never sold in bulk.

the household of the emperor, as well as by the mandarins and the wealthy classes generally. Young Hyson differs from Gunpowder only in the fact that its leaves are curled or twisted, instead of being rolled; the difference between its three chops being very marked, as to the fineness and perfection of finish of the leaves. Hyson bears the same relation to Young Hyson that Imperial does to Gunpowder, while Hyson Skin is composed of the refuse and rejected leaves of all the finer grades. For this reason its quality, as well as its appearance, varies greatly; without considering at all the question of adulteration, which is easily possible with a tea of this heterogenous make-up, it is likely to be found equal in quality to the best Gunpowder, or wretchedly weak and poor.—*Good Housekeeping.*

PNEUMONIA.

Pneumonia has many terrors for most people, because of the large percentage of fatal cases (about 30 in 100), the suddenness with which a fatal issue is reached, and the excruciating pain that accompanies the first stages of the disease. Pneumonia results from exposure to wet and cold, and is, therefore, more common in the winter than in the summer, and in the Northern States is more prevalent in the spring than any other season in the year. Excessive use of liquor conduces to the disease in its most malignant and fatal character. Cigarette smoking is not productive of the malady, but a person addicted to this habit is regarded by physicians as a more likely subject for attack than one who does not smoke cigarettes. Pneumonia seldom attacks children under five years old, and attacks occur even more rarely between the ages of five and ten. It is more common among men than among women. Pneumonia, or pneumonitis is a very old form of illness, but up to the beginning of the last decade was more generally known as lung fever. It is an inflammation or congestion of the lungs, and there are four distinct classes of the malady, known as lobar, lobular, fibrous.

CLEVELAND'S SUPERIOR Baking Powder.

The Official Reports of the
United States Government, 1889,
Canadian Government, 1889,
New Jersey Commission, 1889,
Ohio Food Commission, 1887,
prove that Cleveland's is

THE STRONGEST

of all the pure* cream of tartar baking powders.

*Ammonia or alum powders, whatever their strength, should be avoided as injurious.

25 CTS PISO'S CURE FOR CURES WHERE ALL ELSE FAILS. Best Cough Syrup. Tastes good. Use in time. Sold by druggists. CONSUMPTION 25 CTS

Buffalo Lithia Water, Spring No. 2, in Bright's Disease, Gout, Stone in the Bladder, and Diseases Generally of Uric Acid Diathesis, Etc., Etc.

DR. WM. A. HAMMOND, of Washington, D. C., Surgeon General U. S. Army (retired), Professor of Diseases of the Mind and Nervous System in the University of New York, etc.

"I have for some time made use of the BUFFALO LITHIA WATER in cases of AFFECTIONS of the NERVOUS SYSTEM, complicated with BRIGHT'S DISEASE OF THE KIDNEYS or with a GOUTY DIATHESIS. *The results have been eminently satisfactory.* Lithia has for many years *been a favorite with me in like cases, but the* BUFFALO WATER CERTAINLY ACTS BETTER THAN ANY EXTEMPORANEOUS SOLUTION of THE LITHIA SALTS, and is, moreover, better borne by the stomach. I also often prescribe it in those cases of CEREBRAL HYPERÆMIA resulting from OVER MENTAL WORK—in which the condition called NERVOUS DYSPEPSIA exists—*and generally with* MARKED BENEFIT."

DR. WM. B. TOWLES, Professor of Anatomy and Materia Medica, in the Medical Department of the University of Virginia.

"BUFFALO LITHIA SPRINGS, No. 2, belongs to the ALKALINE or, *perhaps, to the* ALKALINE SALINE Class, *for it has proved far more efficacious in many diseased conditions than any of the simple* ALKALINE waters.

"*I feel no hesitancy whatever in saying that in* GOUT, RHEUMATIC GOUT, RHEUMATISM, STONE *in the* BLADDER, and in all diseases of URIC ACID DIATHESIS, *I know of no remedy at all comparable to it.*

"*Its effects are marked in causing a disappearance of* ALBUMEN *from the urine. In a* single case of BRIGHT'S DISEASE *of the* KIDNEYS, I witnessed *decided beneficial results from its use, and from its action in this case I should have great confidence in it as a remedy in certain stages of this disease.* In DYSPEPSIA, especially that form of it in which there *is an excessive production of* ACID *during the process of nutrition*, in some of the PECULIAR AFFECTIONS *of* WOMEN, notably in SUPPRESSION of the MENSES, and in CHRONIC MALARIAL POISONING, etc., I have found it highly efficacious."

DR. G. HALSTEAD BOYLAND, late Professor of Surgery, Baltimore Medical College, late Surgeon French Army (Decorated), Member Baltimore Academy of Medicine, Member of American Medical Association.

"In BRIGHT'S DISEASE of the KIDNEYS, ACUTE or CHRONIC, BUFFALO LITHIA WATER, Spring No. 2, is, in my experience, *without a rival*, whether in the PARENCHYMATOUS form or INTERSTITIAL NEPHRITIS. In cases in which the ALBUMEN in the URINE reached as high as 50 per cent., I have known it under a course of this water gradually diminish and finally disappear, at the same time other alarming symptoms were relieved and the sufferers restored to health.

"In STONE in the BLADDER of the RED LITHIC ACID and the WHITE PHOSPHATIC DEPOSIT, the SOLVENT power of this water is *unmistakable.*"

Water in cases of one dozen half gallon bottles, $5.00 f. o. b. here.

THOS. F. GOODE, Proprietor, BUFFALO LITHIA SPRINGS, VA.

and caseous, or tubercular pneumonia. The two classes last mentioned not infrequently terminates in phthisis or consumption. The first stage of pneumonia is known as the stage of "engorgement," the second stage as "red hepatization," when the lungs become the the color of the liver. When this brownish color gives way to gray the malady has reached the third stage, called the stage of "gray hepatization." This is the stage of "absorption" in favorable cases, when convalescence ensues. In unfavorable cases the disease passes into the purulent stage, when death is likely to ensue in a very few days; it sometimes comes in a few hours. The first symptoms of pneumonia observable by the ordinary patient is a pronounced chill, frequently accompanied by rigor. Invasion is abrupt. Immediately after the chill, and sometimes while the chill continues, the patient experiences a severe pain within a circumscribed space at or near the nipple on the affected side. The pain in character is lancinating, very much resembling that caused by a stab. A racking cough and expectoration soon follow. This is the stage in which the oval bacteria is found in the sputum. The symptoms noticed by the patient are now a fever of a temperature of from 103 to 105 degrees, pain in the head, anorexia or loss of appetite, severe thirst, prostration, a hot skin, pulse varying from 80 to 120, full and hard and increased respiration. The patient finds much difficulty and pain in breathing, and is compelled to breathe shortly and quickly. It is very often the case that patients do not at once take to their beds. There are many cases of pneumonia that physicians call "walking cases." Patients suffering with pneumonia frequently walk into the hospitals. In the second stage of the disease the patient's pain may cease, but the cough may continue, though less hard and painful. In the third stage the patient, if the symptoms are favorable, will cough less, respiration will resume its normal condition, appetite will return, and pain will almost, if not entirely, disappear. Once convalescence begins in cases of pneumonia, however, recovery is almost certain. Fatal relapses are very infrequent. Pericarditis, or inflammation of the membranous sac which encloses the heart, is a very grave complication in pneumonia There is much difference of opinion among physicians as to different methods of treatment, but there can be no doubt that to relieve the system from all unnecessary exertion and thus give nature a chance to do the curing is the one which generally succeeds best. Relieve the bowels and digestive system by using Ayer's Cathartic Pills and assuage the cough by Dr. J. C. Ayer's Cherry Pectoral and you will not go amiss. In many cases the use of these approved remedies will act as a preventive after a severe cold, and by curing the cold prevent pneumonia.

Fine Table Wines

From our Celebrated Orleans Vineyard.

Arpad Haraszthy & Co.

Producers of the

ECLIPSE CHAMPAGNE,

530 Washington St. SAN FRANCISCO.

GENERAL AGENCIES:

NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOSEPH R. PEEBLES' SONS CO., 73 West Fourth Street.
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.

PAPER SHOE STRING.—A machine for making shoe strings out of paper is a recent Philadelphia invention.

TRANSATLANTIC COLD.—The cold weather in England raised the death rate in London to thirty per thousand.

TO PROMOTE POPULATION.—French parents possessing seven or more children have certain exemptions from taxation.

VINEYARD FANCY.—It is asserted by French vintagers that the grapes gathered at sunrise always produce the lightest and most limped wine.

HEAVY COIN.—The largest gold coin in circulation in the world is the "loof," a gold coin worth $325. It weighs over a pound. It circulates in Anam, Asia.

DANGEROUS PETS.—A French scientist declares that the domestic pets of the world carry at least thirty per cent. of the common contagious diseases from house to house.

NEW ANTISEPTIC.—Lysol is the name of a new antiseptic, which appears to consist of saponified tarry oils. It mixes readily with water. The preparation is as yet a secret.

ELEPHANT'S BRAIN.—The brain of an elephant is remarkably small, not more than one-twenty-third as large as that of a human being in proportion to the weight of both.

CRUSTACEA AND BACTERIA:—A French savant has discovered that the phosphorescence in crustacea is owing to the presence of bacteria in the muscles—in other words, disease.

ROUGH ON DOCTORS.—The Georgia Legislature is considering a bill to punish doctors and druggists who become drunk. For first conviction a fine of $200 is proposed, and for the second the license to practice revoked.

A DEAD SEA.—Black Sea soundings are said to show that below the depth of 600 feet the water is so impregnated with sulphurated hydrogen gas, emanating from decaying animals and vegetable matter, that living organisms are not found there.

CANCER BACILLUS.—Dr. Russell, senior pathologist at the Edinburgh Royal Infirmary, claims that he has discovered the cancer parasite, which he maintains he has traced to a fungus of the yeast type. He is still pursuing experiments in this department of research.

WISE CAUTION.—The Berlin police have ordered that all buildings taking consumptives to be treated by Koch's "lymph" must be disinfected, like those inhabited by diphtheria patients. Further, all patients must be registered at the nearest police station.

BOGUS DIPLOMAS.—Another bogus medical college has been unearthed in a small Vermont town. It is not incorporated, owns no building, and numbers among its faculty a telegraph operator, a newspaper reporter, and some doctors of doubtful repute living hundreds of miles away.

INTERESTING INQUIRY.—Two chemists are experimenting at Freeport, Pa., with a view of producing carbon points for electric lighting from natural gas. It is said that by burning the gas in a specially prepared furnaces, pure carbon is obtained, but as yet at a cost too great for practical purposes.

ANÆSTHETIC CHAIR.—A new chair has been brought out by the Medical Battery Company, of Oxford Street, London. An electric current renders the patient insensible to pain when an operation is being performed on him. If this be true, the days of laughing-gas, ether, etc., for dentistry are numbered.

BULGARIAN SENSE.—Bulgaria is not ranked highest among the civilized nations. But if in its borders a patent medicine is advertised to cure a particular disease, and fails to do so, the vendor thereof is liable for damages and imprisonment for publishing a lie by which the public is injured in health and purse.

NO BUDDENSIEKS.—In France architects are required to have diplomas, showing that four years have been spent in technical study. They are held responsible for twenty years for accidents in a building chargeable to their incompetency. They must be present in person or by a representative during the whole construction.

FOOLISH CHALLENGE.—Dr. H. S. Tanner, who fasted forty days, now lives near Clinton, Missouri. He now challenges Signor Succi to sit down with him in Chicago during the World's Fair to test the matter in a ninety days' fast on water only; or, if Succi prefers, let the fast continue from day to day until one or the other yields the contest.

COLORS ON METALS.—A steel color is developed on brass by using a boiling solution of arsenic-chloride. A concentrated solution of sodium sulphite causes a blue coloration. Black, as on optical instruments, is obtained from a solution of platinum-chloride, to which tin-nitrate has been added. In Japan, brass is bronzed by using a boiling solution of copper sulphate, alum and verdigris.

IMPERMEABLE GLUE.—To make an impermeable glue, soak ordinary glue in water until it softens, and remove it before it has lost its primitive form. After this, dissolve it in linseed oil over a slow fire until it is brought to the consistency of a jelly. This glue may be used for joining any kind of material. In addition to strength and hardness, it has the advantage of resisting the action of water.



A HIGH-GRADE PIANO

AT A VERY MODERATE PRICE.

NEW DESIGNS. FANCY WOODS.

Terms Easy. ✣ Monthly Instalments.

TWO, THREE AND FOUR PEDALS.

Catalogues, Prices, Terms, Etc., sent to any address.

EVERY PIANO WARRANTED 5 YEARS.

(Mention this Paper.)



(The Worcestershire.) LEA & PERRINS' (The Worcestershire.)

SAUCE.

IMPARTS THE MOST DELICIOUS TASTE AND ZEST TO

HOT AND COLD MEATS, GRAVIES, SALADS, SOUPS, GAME, FISH, WELSH RAREBITS, Etc., Etc.

Signature on every bottle of the genuine and original.

Lea & Perrins

JOHN DUNCAN'S SONS, NEW YORK.

THE N. Y. HAY EXCHANGE BULLETIN.

OFFICIAL REPORT OF THE HAY AND STRAW MARKET AT NEW YORK.

COMMISSION SALESMEN.

NOTICE.

These names are arranged alphabetically.

WM. AFFLECK & CO.,
Commission Merchants in
HAY AND STRAW,
Office No. 5,
N. Y. Hay Exchange Building.

J. ALSDORF,
Commission Dealer in
HAY AND STRAW,
33d Street and 11th Ave.,
NEW YORK.

E. A. DECKER. F. W. TOMPKINS.
DECKER & TOMPKINS,
Commission Merchants in
HAY, STRAW, GRAIN,
Office: 16 New York Hay Exchange Building.

L. S. DILLENBACK. T. O. PECK.
DILLENBACK & PECK,
MAIN OFFICE:
Room 0, N. Y. HAY EXCHANGE, N. Y. City.
STOREHOUSE AND BRANCH OFFICE:
101, 103 and 105 North 5th St.,
and 152 and 154 Berry St.,
Palmer's Dock. Brooklyn, E. D.

EDWIN B. DUSENBERRY,
COMMISSION MERCHANT,
And Wholesale Dealer in
HAY, STRAW AND GRAIN.
No. 1, N. Y. Hay Exchange, New York.

THOS. FONDA & CO.,
Commission Merchants
And Dealers in Hay, Straw, Grain and Country Produce,
13 & 14 N. Y. Hay Exchange Building.

N. A. FULLER,
COMMISSION MERCHANT IN
HAY AND STRAW,
33d Street and 11th Ave.,
NEW YORK.

THEO. P. HUFFMAN & CO.,
COMMISSION MERCHANTS
In Hay, Straw, Grain, Feed, &c.,
648 & 650 West 34th Street,
Bet. 11th & 12th Aves., N. Y.

H. B. Jenkins. F. S. Williams.
JENKINS & WILLIAMS.
COMMISSION MERCHANTS IN
HAY, STRAW AND GRAIN,
HAY EXCHANGE.

The N. Y. Hay Exchange is located at 601 W. 33d St., corner 11th Avenue.

Only the cards of members of the N. Y. Hay Exchange appear on this page.

RULES FOR GRADING HAY AND STRAW

As Adopted by the N. Y. Hay Exchange.

CHOICE OR PRIME HAY—Shall be pure timothy, properly cured, bright, natural color, sound and well baled. No. 1—Shall be timothy, not more than one-eighth (⅛) mixed with "red top" properly cured, bright natural color, sound and well baled. No. 2—Shall be timothy, not more than one-quarter (¼) mixed with red top and blue grass, properly cured, good color, sound and well baled. No. 3—Shall include all timothy not good enough for No. 2, proportionately mixed with blue grass, red top, and clover, sound and well baled. SHIPPING—Shall include all hay not good enough for other grades, and may be natural meadow, free from wild or bog grass, and must not contain over one-third (⅓) clover, sound and well baled. CLOVER MIXED—Shall include all hay containing not over two-third (⅔) clover, and one-third (⅓) timothy, properly cured, sound, and well baled. CLOVER—Shall be medium grown, properly cured, good color, sound, and well baled. NO GRADE OR REJECTED HAY—Shall include all hay badly cured, musty, stained, or in any way unsound.

No. 1. RYE STRAW—Shall be clean, bright, long Rye, in bundles, sound, well and securely baled. No. 2—Shall be long Rye, in bundles, sound, well and securely baled. SHORT RYE—Shall be clean, not bundled, sound, well and securely baled. OAT STRAW—Shall be clean, bright, sound, well and securely baled.

In the New York market bale-wood is weighed in without tare. In all other markets it is deducted.

These quotations for choice, No. 1 and No. 2 hay are for large bales. 5c. per cwt. less when in perpetual press bales.

The New York quotations are per cwt. At other points, per ton.

NEW YORK, Feb. 16, 1891.

The following are the market prices to-day at New York.

	Large Bales.	Small Bales.
Prime Hay	60c @	55c @
No. 1	55 @	50 @
No. 2	50 @	45 @
No. 3	40 @ 50	40 @
Shipping	40 @ 50	40 @
Clover mixed	45 @	40 @ 45
Clover	40 @ 45	40 @
Prime Rye Straw	85 @ 90	
No. 2 "	80 @ 85	
Short "	55 @ 60	
Oat and Wheat	45 @ 50	

Receipts week ending Feb. 14, as follows:

Via N. Y. Central	229 cars.
" West Shore	171 "
Other roads by Lighter, 34th Street	65 "
Total	465 cars.

Very little can be said to change the tone of the Hay market for the last week or two; and, although there has been considerable activity in trading, and Hay has been moving freely, there is no material change in the prices, as will be seen by the above quotations.

The stock of Hay on hand is comparatively small, and, unless the receipts increase to some extent in the near future, we do not look for a more discouraging state of the trade than has existed for several weeks past.

Prime Hay is scarce, and a *strictly fancy* article, should there be any, would bring 65c. in a small way.

Cheaper grades still in greater favor than the better qualities.

Rye Straw is a little dull, and the demand hardly equal to the supply; 90c. is an outside price.

OSCAR KENT,
Commission Merchant,
HAY AND STRAW,
Room 20, New York Hay Exchange Building.
Personal attention guaranteed all consignments.

JOHN KERWIN & SON,
DIRECT RECEIVERS OF
HAY, GRAIN and GENERAL PRODUCE
DEPOT AND STOREHOUSES,
Palmer's Dock, Nos. 97 & 99 North Fifth Street,
BROOKLYN, N. Y.
SHIPPING ADDRESS, PALMER'S DOCK, BROOKLYN, N.Y
West Shore R. R., N. Y. C. & H. R. R. R., N. Y. L. E. & W. R. R., Pennsylvania R. R., D. L. & W. R. R., Lehigh Valley R. R., and connections.

W. J. OVEROCKER. PERRY HATCH.
OVEROCKER & HATCH,
Commission Merchants in
HAY, STRAW AND GRAIN,
33d Street & 11th Avenue, New York.
References: West Side Bank, New York City; Exchange Bank, Holly, N. Y.

Gilbert Plowman, NEW YORK. Spencer Billington, FORT HUNTER, N. Y.
PLOWMAN & BILLINGTON
COMMISSION MERCHANTS,
HAY, STRAW, GRAIN, &c.
No. 15 N. Y. Hay Exchange,
33d St. & 11th Ave., NEW YORK.

JAMES ROZELL & SON,
Commission Merchants and Wholesale Dealers in
HAY, STRAW, GRAIN AND COUNTRY PRODUCE.
N. Y. Hay Exchange, New York.

SKINNER, BLOOM & CO.,
Successors to Rogers, Skinner & Co.,
COMMISSION MERCHANTS
And Dealers in
Grain, Flour, Hay, Feed, Meal, &c.,
74 CORTLANDT STREET, - NEW YORK.
Barge GYPSIE, Foot Bridge St., Brooklyn.

H. SLINGERLAND,
Barges MERCHANT and HARVEST QUEEN
Foot of West 11th Street,
HAY AND STRAW.
Also, 33d and 35th Streets, and all Railroad terminals. Special facilities for lighterage free goods.

CHARLES F. SWAN,
Commission Merchant in
HAY, STRAW & GRAIN,
At all the Railroad Terminals in New York, Brooklyn, Jersey City, &c.
MAIN OFFICE,
108 BROAD ST., NEW YORK.

TITUS, WELLS & WILLETS,
Commission Merchants and Dealers in
HAY AND STRAW,
133 Roosevelt St.,
NEW YORK.

VAN ALSTYNE & CO.,
COMMISSION MERCHANTS.
SPECIALTIES:
HAY, STRAW & FLOUR,
Nos. 2 and 4 Stone St., New York.
Liberal advances made on consignments.

G. E. Van Vorst. James M. Hillery.
VAN VORST & CO.,
COMMISSION MERCHANTS,
HAY, STRAW AND GRAIN
N. Y. Hay Exchange, 33d St., & 11th Ave.
562 & 564 West 34th St., NEW YORK.

NOTICE.

These names are arranged alphabetically.

HOSMER, CRAMPTON & HAMMOND,

NO. 43 COMMERCIAL STREET,

BOSTON.

COMMISSION MERCHANTS,

HAY, STRAW, FLOUR & GRAIN.

E. B. HOSMER, G. W. CRAMPTON, BENJAMIN HAMMOND, A. L. ROBINSON.

BOSTON HAY AND STRAW MARKET.

Hay, choice to fancy in large bales	$13.50 to $14.50
Hay, choice to fancy, perpetual pressed bales	12.00 to 13.00
Hay, fair to good	11.00 to 12.00
Hay, poor to ordinary	8.00 to 11.00
Hay, Clover and Clover mixed	9.00 to 10.00
Hay, swale	8.00 to 9.00
Straw, Rye, good to prime	17.00 to 17.50
Straw, Oat	9.00 to 9.50

BOSTON, Feb. 16th, 1891.

Receipts for the week are 334 cars of hay and 30 cars of straw; corresponding week last year, 307 cars of hay and 24 cars of straw. There is no change in the general condition of the market from what has previously been noted. The receipts continue in excess of the demand. Quite large stocks have accumulated, which the railroads are crowding receivers to move promptly. The market is weak and decidedly in buyers' favor. Our quotations are nominal and represent asking prices; they are frequently shaded, however, to effect sales.

Rye straw is easier, with a slack demand.

H. F. WILSON,
WIRE BALE TIES,
458 WEST 38th STREET, New York.

THURSTON'S IVORY PEARL TOOTH POWDER
WILL KEEP THE TEETH IN PERFECT CONDITION AND THE GUMS HEALTHY.
Price 25 & 50 Cents PER BOTTLE

NATURAL MINERAL PURGATIVE WATER.
From the Springs of
VILLACABRAS.
Prescribed by the Highest Medical Authorities.
Stronger effects than any other under smaller volume. No smell—no repulsive taste—no after-constipation—no gripes. As a daily laxative it can be taken either pure or mixed with milk, tea or broth.
Sold by all Good Druggists.

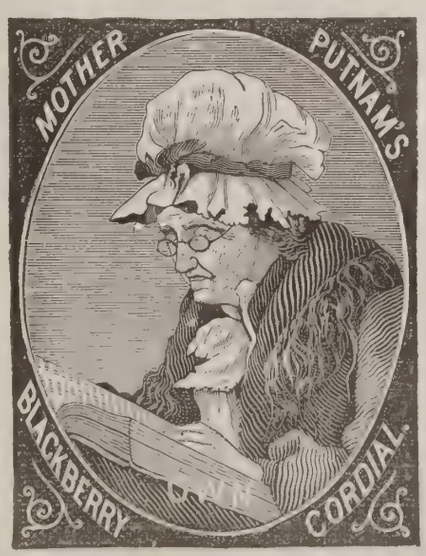
HARTSHORN'S SELF-ACTING SHADE ROLLERS
NOTICE SCRIPT NAME OF Stewart Hartshorn ON LABEL, AND GET THE GENUINE
HARTSHORN

HAMMOND'S
CELEBRATED
Calumet Oleomargarine

Strictly pure, cheap and healthful.
Ask your grocer for it.
Put up in packages of all sizes, also prints and rolls.

C. H. HAMMOND CO.,
607 to 615 THE ROOKERY,
CHICAGO.

Also offices at Boston, South Omaha, Neb., and Hammond, Ind.



C-U-R-E-S
DIARRHŒA, DYSENTERY,
MALARIA,
all ailments of the bowels. Is an anti dyspeptic, and a DELICIOUS INVIGORATIVE. Leading Physicians prescribe it for ADULTS AND CHILDREN. *FOR SALE* by Druggists and dealers.
RHEINSTROM BROS., DISTILLERS OF FINE LIQUEURS, 54, 56, 58, 60, 62 E. 3rd STREET, CINCINNATI, O.

GOLD MEDAL, PARIS, 1878.



W. BAKER & Co.'s
Breakfast
Cocoa

from which the excess of oil has been removed,

Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

40 COUPON OFFERS
and our large Illustrated Catalogue of SCROLL SAWS, Tools, Designs, and 30 Cts. WORTH of *full size* SCROLL SAW DESIGNS, sent FREE for 10 Cts. in stamps to pay postage.
JOHN WILKINSON CO., 369 State St., Chicago.

THE GREAT AMERICAN TEA COMPANY

LADIES

GET UP ORDERS.
Entire New Departure.
A HANDSOME PRESENT TO EVERY SUBSCRIBER.

THE GREATEST INDUCEMENTS EVER KNOWN TO INTRODUCE OUR NEW GOODS.

If you enjoy a cup of **Delicious Tea** send in your orders. 3½ lbs. Fine Tea by mail on receipt of $2 and this "ad". Beautiful premiums given away with $5 orders and upwards. The **most extraordinary bargains** ever offered, during the next thirty days. China Tea Sets and Lamps with $10, $15 and $20 orders to introduce our excellent **New Crop Teas.** Formosa and Amoy, Oolong, Congou, English Breakfast, Japan, Imperial, Young Hyson, Gunpowder, Sun Sun Chop and Mixed. Good mixed teas 20c. per lb. Headquarters in United States for Fine Teas. One pound of our tea will go farther than three pounds of trash. Thirty years' national reputation for selling **Pure Goods Only.**

THE GREAT AMERICAN TEA COMPANY,
P. O. BOX 289. 31 and 33 Vesey Street, New York.

PUBLICATIONS OF THE

ANALYST PUBLISHING CO.

THE AMERICAN ANALYST.
Weekly. Every Thursday. $1 per year.

THE ROOFER, TINNER AND SHEET-IRON WORKER.
Monthly. 15th each month, $1 per year.

THE LEATHER MANUFACTURER.
Monthly. 1st each month. $3 per year.

Reliable agents and representatives wanted everywhere on liberal terms. Address

ANALYST PUBLISHING CO.
19 PARK PLACE, NEW YORK.

THE LABORATORY.

To Inventors, Manufacturers and Applicants for Patents

The AMERICAN ANALYST may be consulted upon all matters involving theoretical or applied chemistry. Advice and opinions given. Analyses and assays made. Patents perfected and secured. Terms reasonable.

Address, AMERICAN ANALYST.
19 Park Place, N. Y.

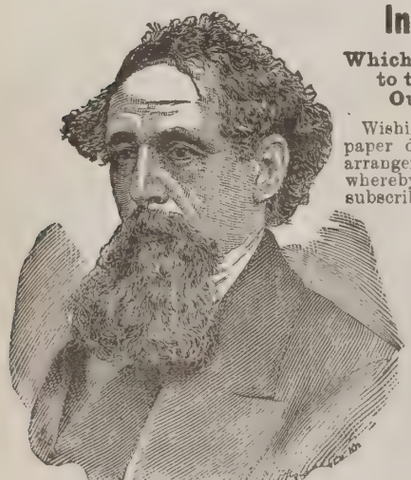
GRAND PREMIUM OFFER!

A SET OF THE

WORKS OF CHARLES DICKENS,

In Twelve Large Volumes,

Which we Offer with a Year's Subscription to this Paper for a Trifle More than Our Regular Subscription Price.



CHARLES DICKENS.

Wishing to largely increase the circulation of this paper during the next six months, we have made arrangements with a New York publishing house whereby we are enabled to offer as a premium to our subscribers a **Set of the Works of Charles Dickens,** in **Twelve Large and Handsome Volumes,** with a year's subscription to this paper, for a trifle more than our regular subscription price. Our great offer to subscribers eclipses any ever heretofore made. Charles Dickens was the greatest novelist who ever lived. No author before or since his time has won the fame that he achieved, and his works are even more popular to-day than during his lifetime. They abound in wit, humor, pathos, masterly delineation of character, vivid descriptions of places and incidents, thrilling and skillfully wrought plots. Each book is intensely interesting. No home should be without a set of these great and remarkable works. Not to have read them is to be far behind the age in which we live. The set of Dickens' works which we offer as a premium to our subscribers is handsomely printed from entirely new plates, with new type. The twelve volumes contain the following world-famous works, each one of which is published *complete, unchanged, and absolutely unabridged:*

DAVID COPPERFIELD,
MARTIN CHUZZLEWIT,
NICHOLAS NICKELBY,
DOMBEY AND SON,
BLEAK HOUSE,
LITTLE DORRIT,
OUR MUTUAL FRIEND,
PICKWICK PAPERS,
BARNABY RUDGE AND CHRISTMAS STORIES,
OLIVER TWIST AND GREAT EXPECTATIONS,
THE OLD CURIOSITY SHOP AND THE UNCOMMERCIAL TRAVELER,
A TALE OF TWO CITIES, HARD TIMES AND THE MYSTERY OF EDWIN DROOD.

The above are without question the most famous novels that were ever written. For a quarter of a century they have been celebrated in every nook and corner of the civilized world. Yet there are thousands of homes in America not yet supplied with a set of Dickens, the usual high cost of the books preventing people in moderate circumstances from enjoying this luxury. But now, owing to the use of modern improved printing, folding and stitching machinery, the extremely low price of white paper, and the great competition in the book trade, we are enabled to offer to our subscribers and readers a set of Dickens' works at a price which all can afford to pay. Every home in the land may now be supplied with a set of the great author's works.

"BILLET"

are

Carefully Selected

French Sardines,

Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,
HOWARD STREET, BOSTON, MASS.

OUR GREAT OFFER

TO SUBSCRIBERS

TO THE

AMERICAN ANALYST.

We will send the **ENTIRE SET OF DICKENS WORKS,** *in* **TWELVE VOLUMES,** *as here described, all postage prepaid by ourselves, also* **THE AMERICAN ANALYST** *for* **ONE YEAR,** *upon receipt of* **$1.50,** *which is only* **50** *cents more than the regular subscription price of this paper.* Our readers, therefore, practically get a set of Dickens' works in twelve volumes for only **50** cents. This is the grandest premium ever offered. Up to this time a set of Dickens' works has usually been $10.00 or more. Tell all your friends that they can get a set of Dickens' works in twelve volumes, with a year's subscription to **THE AMERICAN ANALYST** for only **$1.50.** Subscribe now and get this great premium. If your subscription has not yet expired, it will make no difference, for it will be extended one year from date of expiration. We will also give a set of Dickens', as above, free and post-paid, to any one sending us a club of three yearly subscribers.

ADDRESS:

THE ANALYST PUBLISHING CO.
No. 19 PARK PLACE,
NEW YORK.

Tabasco Pepper Sauce

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced, by connoisseurs, to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY,

NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

Don't kick



because your business is bad, but advertise If you don't know how to, write to us and we will tell you.

We will prepare your advertisement or give you advice and assistance to aid you in preparing it yourself. We will have the advertisement set in type and procure illustrations if any are needed. When a satisfactory advertisement has been produced we will furnish proofs and an electrotyped pattern to be used in duplicating the advertisement if the display or illustration make an electrotype desirable.

Address GEO. P. ROWELL & CO.,
Newspaper Advertising Bureau,
10 Spruce St., N. Y.

NATRONA BI-CARBONATE OF SODA.

(ABSOLUTELY PURE.)

The nature of the raw material from which NATRONA BI-CARBONATE OF SODA is made—viz., kryolith, a mineral containing *pure sodium*—insures a purity and uniformity of product which cannot be obtained from any other known material. In making BI-CARB. SODA from any other raw material, the use of sulphuric acid is a necessity, but none is used in any part of the process of making NATRONA BI-CARB.; hence its entire freedom from the slightest trace of arsenic, which is always present in ordinary soda. Its absolute purity and entire freedom from all traces of *sulphate of soda*, common salt and other impurities, render NATRONA BI-CARB. NEARLY TASTELESS, and being bolted through the finest bolting-cloth, insures the finest stage of division.

To these indisputable facts the attention of CONSUMERS of soda is specially called. They are IMPORTANT, and should influence both those who use and those who sell soda, to buy and sell NONE BUT THE BEST.

The NATRONA BI-CARB. Soda is kept in stock by almost every wholesale druggist and grocer throughout the United States, of whom it may be ordered.

Natrona Bi-Carb. Soda is unequaled by any other brand of English or American Manufacture.

PENNA. SALT MANUFACTURING CO.,

NATRONA CHEMICAL WORKS. PHILADELPHIA, PA.



ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,
184 Greenwich St., N. Y.

DR. PRICE'S CREAM Baking Powder.

Most Perfect Made

A Pure Cream of Tartar Powder—
Superior to every other known.
Used in Millions of Homes—40 Years the Standard.
Delicious Cake and Pastry, Light Flaky Biscuit, Griddle Cakes
Palatable and Wholesome.
No other baking powder does such work.

Vigoral

FOR

STRENGTH, NOURISHMENT AND REFRESHMENT.

PREPARED BY

ARMOUR & CO.,

CHICAGO,

From their celebrated EXTRACT OF BEEF, further strengthened in muscle-forming constituents by the addition of pure beef in powdered form.

Vigoral is seasoned ready for use and makes a delicious hot drink for cold weather.

SWIFT'S

CHOICE

Chicago Dressed Beef

AND

MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,

UNION STOCK YARDS,

CHICAGO, ILLS.

We shall be glad to supply our readers with any periodical published at club rates.

Send us a postal naming periodical and we will quote you prices.

ANALYST PUBLISHING CO.,
19 Park Place, New York.

GLENN'S SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,

C. N. CRITTENTON,

115 FULTON STREET,
NEW YORK.

Be progressive and keep abreast of the times. Avoid dyspepsia by using **Lard Compound** and **Cottolene,** a substitute for lard.

The highest medical authorities pronounce them healthful; and expert cooks commend them.

Our **Clairette** brand of cotton oil soap is the purest and best laundry soap in the market; as pleasant to the hands as genuine castile.

N. K. FAIRBANK & CO.,
CHICAGO AND ST. LOUIS.

The Standard of Excellence.

KINGSFORD'S

OSWEGO

Pure and Silver Gloss



STARCH

KINGSFORD'S
OSWEGO CORN STARCH
FOR
Puddings, Custards, Blanc-Mange, Etc.
THE PERFECTION OF QUALITY.
WILL PLEASE YOU EVERY TIME.
Always ask your Grocer for these goods.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 9. NEW YORK, THURSDAY, FEBRUARY 26, 1891. WHOLE No. 209

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - $1 per year.
Single Copies, - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.

Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.

Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,

H. LASSING, M. D., } *Editors.*
T. P. McELRATH, }

No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

Clean Books 99
Contingencies of Old Age 100
Domestic Dietetics 101
Editorials 97
Bridget Doomed; Anti-Kidnapping League; The Siberian Railway; Courageous Prudence; The Aluminum Age.
Hay Market Official Bulletin 104
Length, Standard of 99
Newspaper Pictures 101
Vanishing Luxuries 98
What is Said About Us 99

BRIDGET DOOMED.

An ingenious New York lady who has a foudness for scientific experiments is reported to have lately turned her love for electrical engineering to practical account. She was without a servant, and determined to try whether she could not light the kitchen fire by means of a tame flash of electricity, so to speak, and then let it burn up before she got up herself. She prepared wires to and from her bed-head to the kitchen grate, thus completing an electric current with the aid of a small battery, and all that then remained to be done was to so "build" the fire that the materials should become easily ignitable. The wires were connected by a piece of platinum, and round this there was loosely wrapped what firework makers call "lightning paper." Over this again was strewn some tissue paper, upon it placed a wheel of firewood and on the latter the coal. At seven in the morning, when the fire had to be lit, the current was sent from the scientist through the wires. The platinum lit the lightning paper, then the tissue, the tissue the firewood, and the firewood the coal. When she descended to the kitchen the kettle was boiling and the place comfortably warm. She thinks she has done something towards the solution of the servant girl question.

ANTI-KIDNAPPING LEAGUE.

In the latter part of last year a new National Association was organized in this city, under the name of the "Anti-Kidnapping League." The purpose of this league is to hunt down every case of imprisonment of sane persons in insane asylums which it can hear of, and give such assistance as the case demands. The idea of the League originated with a Miss Lothrop, of New York, who was herself the victim of the kidnapping the society has been organized to prevent. She was incarcerated for two years in an asylum, and when she was released she began the work of exposing the evils of which she knew, at the same time working for the organization of a national society to prevent the kidnapping and incarceration of sane persons. The society was organized December 19, 1890, and many men and women of position and influence are included in its membership. It is said that the investigations of the League show that in seven years fifty-six sane persons were imprisoned in the Buffalo Asylum, and that this was admitted by the Asylum authorities in their reports. It is also asserted that the Utica Asylum admits that over one hundred sane persons have been imprisoned there in thirty years. The society admits in many cases there is no fault on the part of the Asylum authorities, but says that the fact that eleven sane persons are annually incarcerated in two institutions shows that in the numerous public and private asylums there is a field for the Anti-Kidnapping League.

THE SIBERIAN RAILWAY.

The great Siberian railway, which will more closely connect Europe with the teeming millions of China, Japan and Eastern Asia, will be commenced this spring. The total length of the line will be 4,810 miles, and the cost about thirty-two millions sterling. In case permanent bridges are built over the immense rivers Obi, Yenesei, Lena, etc., the outlay will be still greater. The commercial and political importance of this undertaking is greater than most people suppose. It will not only help to open out the immense resources of Southern Siberia, but will enable Russia to compete more successfully for the Japanese and Chinese carrying and import trade. Goods that are now sent by sea to Europe will ten years hence be carried overland into Europe, and a good deal of the Chinese carrying trade will go into the hands of Russia. A large portion of the railway will run through millions of acres of the finest virgin soil, over immense rivers, in primeval forests which have never been cut, and through countries abounding in mineral and vegetable wealth. When the line is ready it will be possible to work the rich gold, silver, iron, copper and plumbago mines of Eastern Siberia, which have hardly yet been touched in consequence of the scarcity of labor and the absence of machinery. The rich and fertile regions of the Amoor and Usuri, which boast of a climate as fine as that of France, will then be open to colonists, and also millions of acres of land which are at the present moment almost unpopulated. By means of this railway Russia will be able to convert Vladivostock into a great naval and military station like Sevastopol, and, if necessary, pour several hundred thousand troops on the Chinese frontier in less than three weeks' time. And last, and not least, among the benefits which will accrue to mankind through this undertaking, will be the possibility of visiting China or Japan in about a fortnight from Central Europe, with all that comfort that is attached to railway traveling.

COURAGEOUS PRUDENCE.

We hear and read considerable just now about business dulness and the necessity of retrenchment. Caution is always commendable, in good times as well as in bad, as long as it is accompanied by a resolute spirit, for it should be borne in mind that there is a wide distinction in meaning between the terms caution and cowardice. During a period of general dulness it is often a mark of wisdom for men to restrain their propensity to enterprise, and to slow down their pace to conform to that of their neighbors. "Hasten slowly" is a maxim which may commend itself to the prudent side of even the most enthusiastic natures, and periods frequently occur when real progress is best assured by a courageous slackening of the gait. But that is a wholly different thing from giving way to timidity and apprehension. We see men sometimes who, in their business affairs, seem to collapse at the contemplation of shadows of their own creation. There are men yet living in this city, poor, forgotten and incapable, who, at the outbreak of the war with the South, were prosperous merchants, but who, through apprehension of the effects of civil war upon business, sold out, and never were rich enough to buy in again after they discovered the mistake they had made. Over-caution is sometimes as fatal as over-effort, and must be as sedulously guarded against. Success in business is generally conquered in much the same manner as success in warfare. The brave, prudent man wins in the struggle, while the timidly apprehensive man is pushed to the wall. Without the possession of a reasonable amount of courage, a merchant stands on an unstable and treacherous footing, from which he is liable to be jostled and dislodged at any moment by his more confident and consequently more self-asserting associates. Of what avail are capital, or backing, or familiarity with business technicalities and detail, if their possessor is not also endowed with a stout heart ready to execute what his trained brain has conceived? If in business

competition the physical law of the "survival of the fittest" is found to obtain, it will also be found that it is because the "fittest" are, as a rule, the stoutest hearted and the most courageous. This quality is at all times essential to mercantile success, but especially is it needful, as above remarked, when trade is dull, and men's hearts, as is natural, respond to the depression in their business. That is the time for courage to assert itself, and for energy to redouble its efforts. One of the most wonderfully successful merchant princes of New York made it a rule, when his trade became slack, to greatly expand his advertising, believing that at such junctures it was needful to call every possible resource into play. It is in times of the greatest business activity and expansion that the exercise of prudence is usually most needful, to save men from going too far in the exhilaration of success; but, when opposite conditions obtain, courage is the quality which men require to keep them nerved to confront the situation. The really brave man is, in all positions in life, the one who exhibits the most real prudence.

THE ALUMINUM AGE.

This is the title of a new eight-page alleged Trade Journal, to be issued monthly at Newport, Kentucky, the first number of which has reached us. The ostensible editor is Charles L. Hartsfeld, and the largest advertiser in the paper is the Hartsfeld Furnace and Refining Co., who claim to be manufacturers of pure aluminum and aluminum alloy, and state that they have been in operation in this country since 1885. About two years ago this same concern issued a circular asking newspaper publishers to insert their advertisements, and to take their pay in stock of this same Hartsfeld Furnace and Refining Co. To inspire confidence in the value of this stock a long list of reference was given, including some of the most reliable scientific publications in this country. An application to these so-called references resulted in convincing us that the names had been used without permission, and that the statement that the proprietors of these papers had taken stock in the Hartfeld Furnace and Refining Co. was false. Commercial agency reports about Charles L. Hartsfeld were equally unsatisfactory. As there is no reason to believe that any better or more satisfactory reports could be given now, it seems to us that the *Aluminum Age*, and all connected with it, are good to leave severely alone.

VANISHING LUXURIES.

DAINTY DELICACIES DOOMED TO DISAPPEAR BEFORE IMPROVIDENT GREED.

If the present rate of extermination goes on the menus of the country will be deprived of the substance if not the names of some of their best attractions. Very few persons have eaten real canvass-back duck or real diamond-back terrapin this season, although many thousands think that they have. With a canvas-back worth almost its weight in silver and a terrapin even more precious, the bona fide article has been scarce and the names have been used to cover clever substitutes that only epicures could detect. Indeed, with the terrapin at $60 a dozen, the only way for a caterer to serve it with financial success at the average banquet is to mix with three or four diamond-backs eight or nine of the "sliders" of the far South or the cheaper varieties of other sections. This year the intermixture of varieties so as to secure a satisfactory result at a satisfactory price has become something of an art. The real canvas-back duck has appeared intermittently on bills of fare and even in Baltimore, the headquarters of modern-priced epicureanism, a dish of of it cost $4, the highest rate ever known in that city. A man who recently returned from the Chesapeake region says that it is only a matter of time when the terrapin and the canvas-back duck will be exterminated, and the circumstances fully substantiate his assertion. Fewer terrapin have been caught this year than ever before. The best come from the Chesapeake Bay, and the catchers all say that they never knew them to be so scarce. They have been hunted mercilessly, and, to add to the depletion, the eggs have been taken away by boys and men, who use them for food, Less than a century ago the slaves on an estate in Anne Arundel County, Md., revolted because they were being fed too much on terrapin. Within the memory of men now living these much-prized reptiles sold for $1 a dozen, and their steady rise to $60 a dozen, and scarce at that, illustrates their increase in gastronomic favor. The terrapin farms that were started in Maryland five years ago are still maintained, but a terrapin raised in captivity, even with the best of care, has not the value of one caught wild. It lacks the peculiar qualities which make the dish an unapproachable delight. Five years ago the estimated yield of the Chesapeake Bay was 500,000 terrapin annually. This year it is not one-fifth of that number. The disappearance of the canvas-back duck is due to two causes. It breeds in Hudson Bay and the far northern lakes of British territory. The millions of eggs that are laid along these bodies of water are no longer respected. They are collected for commercial purposes, and the annual destruction is as great as it is disgraceful. When the canvas-back leaves its Northern home it follows the edge of winter down the coast until it reaches the celery-covered flats of the upper Chesapeake Bay. The arrivals have grown less and less. At one time the birds were killed by the hundreds with mounted guns. Not many years ago 7,000 ducks were killed on the opening day of the shooting season. Until a few years ago from 2,000 to 5,000 were shot. Last Fall everybody looked forward to a big season. The previous Winter had been an open one, and and the celery beds were in excellent condition. For the first several days the shooting was fine, but the game was principally in red-heads and the cheaper varieties; there were few canvas-backs. As the season has progressed this scarcity has increased. The red-head duck has taken the canvas-back's place, and as it resembles it in taste and flavor most persons do not appreciate the difference; but the canvas-back is still unequaled, and its disappearance is a misfortune to lovers of good eating. It has permanently gone above the reach of all except the rich. The two ducks are very much alike except in the color of the bead and the bill, the red-head of course being less in price.. On one occasion Chauncey M. Depew was a guest at an elaborate dinner in Washington. The conversation turned upon the dish and the similarity was discussed. "Mr. Depew," said the hostess, who was as matter of fact as she was rich, "how can you tell the difference between the canvas-baek and the red-head?" "Very easily," responded the gentleman from New York. "The difference is in the bill." It was excellent, but fancy the ex-Granger candidates feelings when the hostess exclaimed: "Really, Mr. Depew, I did not know that they cooked the ducks with their bills on." By the next century the extermination of both the canvas-back duck and the diamond-back terrapin will be almost as complete as that of the buffalo. It will be a great loss not only to this country, but to the epicures abroad. Bismarck and Henry Irving and other notables of Europe have frequently had canvas back ducks sent to them from New York, and the demand from across the sea has increased each year. It is rather remarkable that, while organized efforts are being made to keep up the supply of fish and protect the game birds, very little is being done to check the ruin of the delicacies of the land and sea. If there is anything that ought to be plentiful and cheap, it is the oyster. Except milk there is nothing that equals it as a food, and, with the vast area of available beds along the Atlantic coast, it could be made one of the most remunerative of crops. Nature was magnificently bountiful in putting in the bays and rivers and sounds millions of bushels of these bivalves, and just because the original supply was great, the people have rested under the expensive delusion that it would always continue. When the first settlers came to the present site of New York they had 350 square miles of rich oyster beds around them. Where are they now? At one time oysters were found in abundance from Cape Cod to the Gulf of St. Lawrence. They are all gone. The Delaware Bay and the Delaware River were famous for their oysters. They are now practically barren. In the Chesapeake Bay and its rivers were the finest oyster grounds in the world. They aggregated the enormous total of 1,600,000 acres, and yielded from 15,000,000 to 20,000,000 bushels a year, besides supplying seed oysters to Long Island Sound. Of the 25,000,000 bushels of oysters eaten in this country in 1880 the Chesapeake Bay supplied 17,000,000. This season its total product has been less than 5,000,000, and next year it will not reach 3,000,000 bushels. Oysters that brought 40 cents a bushel ten years ago would be worth a dollar a bushel to-day. The advance in price within a year has been over 25 per cent., and the indications are that for next year it will be 25 or 50 per cent. more. New York, Connecticut, and Rhode Island are doing good work with their oyster-planting laws, but at best they will produce only about 2,000,000 bushels annually for the next few years, and in the twelve other States which raise oysters there are no methods of recuperation, and the dwindling of the general supply is sure to continue. The future of this supply rests mainly in the States of Maryland and Virginia, which control the Chesapeake Bay. Both States at last are becoming aroused to the importance of action and the Legislatures that will be elected next Fall will be full of the subject of oysters and oyster plans. The scarcity in the Chesapeake this year drove a lot of Maryland and Virginia dredges to the coasts of North Carolina, but the Tar Heels rose in their wrath and objected to the invasion. Gov. Fowle called out the armed forces, and the visitors were sent back home without apology or delay, whereat the North Carolinians rejoiced and adopted various resolutions thanking the Governor for his work. In Maryland and Virginia the situation is the same. Both have great industries which have been ruined by too much rapacity. Both support navies to protect the supply and pay more for expenses than they get in revenues, without doing any good. Virginia has a slipshod planting law, but it amounts to nothing, because it affords no security to planters. Maryland has a culling law which says that oysters less than two and one-half inches in size shall not be sold, but it has been ignored. The intelligent men of both States recognizes the immediate necessity of establishing a system of oyster farming in order to save the supply, but in this work they have the persistent and demagogical opposition of more than 30,000 oystermen, who declare that oyster farming means monopoly and the shutting out of poor men. There are on the Chesapeake nearly 15,000 boats engaged in the oyster trade; the capital invested reaches nearly $12,000,000; the living of thousands of men is dependent upon the catching of oysters, and they all view with alarm any action that will interrupt their work until they have dredged every oyster that they can find. They have already impoverished more than a thousand square miles of oyster beds; two-thirds of the bay is barren; this year they have made no money, and yet they have raised a clamor against every policy that will allow the growing of a new crop. They simply cannot see far enough ahead to appreciate the value of intelligent action. A convention of the Southern States on the oyster question has been suggested this year, but it will probably not be held. Maryland and Virginia, however, may get more in harmony, and as their Legislatures meet at the same time next year, they may agree on a simliar line of action. In each Legislature the oystermen will be strongly represented, for they are great on politics, and to them oysters are the Alpha and Omega of statesmanship. Their plans rival the platforms of the Farmers' Alliance in paternalism. For

instance, one of their leaders wants the State to spend a few hundred thousand dollars in replenishing the depleted beds and allow the oystermen to pay it back when they catch the oysters. Oyster farming is the ultimate hope of the intelligent men of the two States. Gen. Seth of Maryland says that with it the bay will yield the State easily $30,000,000 worth of oysters a year, and that the possibilities are $100,000,000. Prof. Brooks of Johns Hopkins University, whose studies on the oyster question have made his reports standard authorities in this country and in Europe, placed the sum at $60,000 000. This is for the million acres of oyster area in Maryland. Virginia's 600,000 acres will yield larger proportionate results because her oysters are better. The artificial cultivation of oysters is a proved success. Our old friend Pliny, in the eighty-ninth book of his natural history, tells us that Sergius Orata first conceived the idea of planting oysters in beds. It was such a great success that he built a palace near his oyster beds so that he could assemble his guests at his oyster suppers. Emperor Vitellius ate oysters four times a day and had his special brands cultivated. The Roman gourmands kept up their supplies by oyster cultivation. In France the supply was exhausted and was built up to greater proportions than it had ever known through the system of farming which has become famous throughout the world. Great Britain is finding out the necessity of the farming system. In this country Connecticut was the first State to grant vested rights in oyster lands. That was forty-five years ago, and she has to-day the best preserved and the most reliable supply in this country, and in spite of the star fish, which do $500,000 damage annually, she has this year on her 74,000 acres realized more clear profit than have Maryland and Virginia on their 1,600,000 acres. Connecticut ships about 100,000 bushels abroad every year, the destination being Liverpool and London, but occasionally Germany and Sweden. New York's oyster culture laws within the past few years have increased her area of oyster culture ten times over, and in Connecticut the increase has been from 1,100 to 11,000 acres. Less than ten years ago New York relied largely upon Baltimore for its supply, This year Baltimore sent orders to Connecticut. It is safe to say that two years from now Long Island Sound, with a total of less than 200,000 acres of oyster ground, will produce more oysters than the 2,000,000 acres of the Delaware and Chesapeake Bays. Could anything illustrate more forcibly the contrast between a system of oyster farming and the lack of it? There is not a respectable hotel nor a reputable restaurant north of the Potomac River that does not have "Blue Points" on its bill of fare. That fact shows one of the pleasant fictions of the oyster trade. Says the recent annual report of the Fish Commissioner of Connecticut: "There are now no genuine Blue Points, so called from their native growing place at Blue Point, Great South Bay, on the south shore of Long Island. They became extinct thirty to forty years ago. Oysters now known by that name are small and round instead of large, crooked, and long, and are grown anywhere on the Sound." The history of the fisheries published by the Government says: "The old 'Blue Points,' cherished by the Dutch burghers and the peak-hatted sons of the Hamptons, who toasted the King long before the Revolution was thought of, was of the large, crooked, heavy-shelled, elongated kind. Two dozen made an armful." In 1853 the value of Blue Points was $200,000 a year. But depletion soon did its fatal work, and in a few years the stock was exhausted. As it was with the Blue Points so will it be with other brands now known to fame unless there is a speedy inauguration of oyster farming. But after all a way is provided to perpetuate the bivalve, while the terrapin and the canvas-back are beyond the enterprise of man.

Subscription $1.00 per year. Now is the time to subscribe.

THE STANDARD OF LENGTH.

HOW IT IS COMPUTED AND PRESERVED.

In the United States and England the standard of length is the yard, and the question arises, How long is a yard? It may be said in answer that a yard is simply an arbitrary standard, which tradition says is based upon the length of the arm of Henry VIII. At present the yard is the distance between two marks upon a certain bar, kept in the Tower of London, and if it should be destroyed, the exact standard could never be replaced. To avoid this uncertainty, and obtain a fixed and unvarying standard, the French, in the last century, made an accurate measurement of a quadrant of the earth's circumference, and taking the ten-millionth part of this distance, gave it the name of *metre*, and adopted it as the standard of length. This length, which is equal to about 39.37 inches, is now in universal use on the continent of Europe, and is authorized as a legal standard in nearly all civilized countries. Considerable discussion has arisen as to whether the original measurement was perfectly accurate, and it seems probable that there was a small error, so that if the standard metre now kept in Paris should be destroyed, a re-measurement of the quadrant of the earth would not give us exactly the same metre. However, the error in any case is a very minute one, and the chances are very small that the original standard will ever be destroyed, to say nothing of the fact that the numerous copies distributed among the various nations of the world do not appreciably differ from it. These standard bars are cast from an alloy of platinum with ten per cent. of iridium, forming a metal almost as hard as steel, practically infusible, and not acted upon by chemical reagents. The measurements are marked upon the surface, and the peculiar shape of the bar is especially calculated to endure a strain without bending; and, in fact, a slight deflection will not materially alter the length of the face on which the scale is engraved. It has been proved that a weight of eighty pounds may be placed on one of these bars, while supported at the ends only, without permanently altering its shape. The standard of weight is the *gramme*, which is the weight of a cubic centimetre of water at 4 deg. C., its point of maximum density. Practically, the standard at Paris is a block of the platinum-iridium alloy weighing one thousand grammes, or one kilogramme. Copies of this standard of weight have also been made for the several nations comprising the International Metric Conference, and it is believed that they do not vary more than one hundred-millionth from the original—a dimension which is utterly unappreciable. A meeting of the International Conference was held at Paris last September, when the work of the committee who prepared the various standards was ratified, and the standards accepted for the respective nations. The successful completion of this work, which has been in progress for about fifteen years, marks an epoch in scientific progress, and denotes an amount of care, skill, and accuracy, on the part of those having the work in charge, which cannot be realized by any one except those directly concerned in it. The simultaneous destruction of these widely scattered standards of measure and weight is almost impossible, but even in such a remote contingency, another measurement of the earth's circumference would practically give us back our metre, with no important change from its original length.—*Pop. Science News.*

BERING, NOT BEHRING.—When the Czar Peter the Great determined to send out an exploring expedition to ascertain whether Asia and America were united by land, he selected to lead this expedition Captain Commander Ivan Ivanovich Bering. Bering was the son of Jonas Svendsen by his second wife, Anne Pedersdatter Bering, and was born at Horsens, in Jutland, in the summer of 1681. All the Russian and Danish records agree as to the spelling of the family name; both in Danish and in Russian it is Bering. His autograph is always written Bering.

CLEAN BOOKS.

SOME SIMPLE EXPEDIENTS FOR CLEANSING BOOKS.

The following methods of cleansing valuable books, may doubtless be found useful: "Grease spots, if old, may be removed from books by applying a solution of varying strength of caustic potash upon the back of the leaf. The printing, which looks somewhat faded after the removal of the spot, may be freshened up by the application of a mixture of one part of muriatic acid and twenty-five parts of water. In a case of fresh grease spots, carbonate of potash (one part to thirty parts of water), chloroform, ether, or benzine renders good service. Wax disappears if, after saturating with benzine or turpentine, it is covered with folded blotting paper and a hot flat-iron put upon it. Paraffine is removed by boiling water or hot spirits. Ink spots or rust yields to oxalic acid, in combination with hot water; chloride of gold or silver spots to a weak solution of corrosive sublimate or cyanide of potassium. Sealing wax is dissolved by hot spirits and then rubbed off with ossia sepia (Cuttle-fish bone); india ink is slightly brushed over with oil, and, after twelve hours saponified aqua ammonia, and particles of color still remaining must be removed with rubber." In this connection it may also be remarked, that if beef tallow be well rubbed into recent ink spots on linen or cotton before sending to the laundry or wash, the spots will be found to have disappeared on the return.

WHAT IS SAID ABOUT US.

"THE AMERICAN ANALYST" is a popular weekly analysis for the family and consumer of everything relating to man's physical need and comfort. For the housekeeper this publication is particularly valuable; not only does it give a thorough digest relative to the properties contained in various foods, but treats of all matters conducive to our health and comfort in time with the progress of scientific research from the pens of able scientists. It is an extremely bright and interesting publication; the various subjects are explained and discussed simply and lucidly, and in such a manner as to make them both entertaining and instructive to any reader. ANALYST PUBLISHING COMPANY, 19 Park Place, New York.—*Household Monthly.*

ELECTRICAL CREMATION.—A patent has been taken out in France for an electric furnace for the rapid incineration of human remains.

LONDON FOG.—The atmosphere of London is said to be gradually becoming more and more harmful to plant life, and it is attributed in a large measure to the thick fogs.

NEW PAPER.—The *Bacteriological World* is the title of a new medical monthly, edited by Dr. Paul Paquin, director of the bacteriological laboratory of Missouri State University.

ESTIMATED POPULATION.—The estimate of the population of the United States for the year 1900, by Hon. Carroll D. Wright, Superintendent of the Department of labor, gives as the approximate figures 76,639,854. This is the result of a careful consideration of the estimates made by several other reliable individuals, the known rates of increase, and the various circumstances that bear upon the growth of population.

THE DOG WAGS THE TAIL.—The man who observed that the large rivers generally happened to run close to the large cities has now discovered that the firms that do the largest amount of business generally happen to have the largest advertisements in the papers.—*Dansville, N. Y., Breeze.*

HUGE NUGGET.—At a recent meeting of the Geological Society, London, a model of the largest gold nugget yet found in Western Australia, known as the "Little Hero," weighing 330 oz. 8 dwt., found at Shaw's Fall, 200 miles from Roebourne and eighty from Nullagine, at a depth of eight inches, was exhibited by Mr. Harry Page Woodward, F.G.S.

MUSICAL MYSTERIES.

HOW THE PHONOGRAPH IS LOADED WITH POPULAR MELODIES.

Half a dozen men were assembled in the rear room of a house in Fifth Avenue the other afternoon examining some curious looking machines which stood on a raised counter in the centre of the room. Attached to each machine was a big brass funnel, shaped like the mouth of an exaggerated ear-trumpet. An odd little cylinder, that looked soft and greasy, revolved at moderate speed back of the point of each funnel. On the other side of the double glass doors that divided the room from a much larger one in front, three negroes and a negress were listening intently. Their heads were close up to the doors, and an expression of expectancy rested upon their faces. Presently four of the men in the room arranged themselves in front of a similar number of funnels, while the other two went in back and began to manipulate a number of belts and screws connected with the machinery. Then one of the men adjusted the funnels so that they were close together, and the smallest of the quartet, a pudgy man with a square, smooth-shaven face, stepped forward and said, in a voice so loud that it made the listening darkies jump: "The following selection is 'Annie Rooney.' It was sung on Feb. — by the ——— Quartet." Immediately the quartet began to sing in fortissimo. The darkies did not have to strain their ears to hear, but they followed the singing very closely nevertheless. They seemed to be more interested in the methods of the singers than in the result. As soon as the song was finished, the singers sat back and discussed their work. "That ought to have taken all right," said one; "but what I don't understand is the way the machinery halts every once in a while. Seems to me the battery is out of order." One of the men behind the machinery now manipulated another screw, and presently the machine repeated in queer, strained tones the song that had been poured into it. Then the quartet got up and sang another song in the same fashion, to which the darkies listened as intently. They were waiting for their turn. Every day the families who live in the houses adjoining the one in which this performance took place hear the strains of music and the sounds of highly pitched recitations, declamations, speeches and dialogues. Every day, also, a lot of people come into the office on the lower floor of this house and want to secure engagements to talk into the phonograph on the upper story. Nearly all these people are professionals. Some of them expect to be paid for their services, and others don't. Some are satisfied with the advertising they expect to get out of their singing and talking, and some merely wish to gratify their vanity. The man who has to judge of the fitness of applicants has a hard time of it occasionally. The other day he came down and said to the manager: "Those women are no use to us. They can't sing for sour grapes." Five minutes later two strong-voiced women came down the stairs in a hurry, and, waltzing into the office of the manager, wanted to know what arrangements he was prepared to make with them. They were ignorant of the decision against them. But they intimated that they did not have very much respect for the judge, anyhow. They complained of his "lack of courtesy." When they heard that he had reported that their voices were not fit to be reproduced by the phonograph, they started for the stairs leading to his office with an energy that frightened the manager partly out of his wits. By the time he had recovered his equilibrium they were going up the stairs two steps at a time. He overtook them, but found it difficult to restrain them. He tried soothing syrup for some time in vain. "It isn't because your voices are not good, correct, sweet, and all that," he said. "Of course not. I am sure your voices are very fine; in fact, your reputation is well known to me. But, as a matter of fact (letting his voice drop to a confidential whisper), voices can be too good for this purpose. A very sweet voice won't do. Patti's songs and those of other big singers didn't go well at all." All his efforts were wasted, however. The women looked at him with withering scorn. "You can't deceive us that way," said the elder of the two, vehemently. "We are no spring chickens. This whole business is a rascally proceeding. That scoundrel you have got up there is unfair and unjust. He only recommends his own tools. We would not have cared if our application had been rejected by a competent judge. Everybody has his own opinions, I presume; but the idea of being insulted into the bargain! We will sue the company for libel; that is what we will do." Then they stamped out, leaving the manager much relieved at their departure. "All sorts of people come to our office," said the manager, "and want to be allowed to sing into the phonograph. Many of them can't sing at all, and even some who are good singers do not seem to be able to use their voices effectively. We are overrun with applicants, and have lots of noted people on our list. We employ a man to do nothing else but play the piano for the vocalists. The man who tests their voices listens to the applicant while he sings a few bars, and if he thinks the voice suitable he spends considerable time in instructing its owner in the way he should sing into the phonograph. It is very difficult to do that well. Many of the applicants want to throw a cartload of pathos into their voices, or sing in a stagy tone, and strut about melodramatically, as if they were before an audience. That won't do at all The tone must be natural, and the words distinctly spoken. Articulation is a very important element in securing good results. The singer must stand still at a certain distance from the receiver, and sing loudly and clearly. Not one out of ten of the singers who appeal to the public possesses a voice suitable for the phonograph. We find it especially difficult to obtain a suitable female voice. The quality of the tone seems to be too fine and too thin. A baritone is the best voice for our purpose. Although most of our applicants volunteer to sing for nothing, just to have their names repeated by the machine, we pay a good and suitable singer well. We don't have much use for the high class operatic airs, but find that the popular songs take much better." The company keeps a book in which are written the names of all the applicants and all the persons who have sung or spoken into the phonograph. Ed. Stevens of the Casino company has been there frequently, and so have a number of other comic opera favorites. The Twenty-third Street Theatre band pours its melody into the phonograph about four times a week. Any number of trios, quartets, quintets and sextets are on the list. All the cylinders on which these songs have been recorded are labelled and put away on their proper shelves. The same song or recitation is frequently repeated on half a dozen cylinders. The latter are rented out to the owners of phonographs, or are put into the nickel-in-the-shot machines. The other day a party of young girls went down to the Edison works in Broad Street and listened to the voice of the phonograph for some time. One of the men connected with the company put up a game on the girls, and made them think that Mr. Edison himself had been aware of their coming, and had talked into the machine for their benefit. The alleged Wizard's voice expressed his gratification at the presence of so many lovely girls, and invited them all to come out to his home in Llewellyn Park. Fortunately the girls did not accept the invitation, although they were very much pleased with it. The Wizard would have probably been much surprised if he had found a bevy of girls coming up to the front door of his house some afternoon with the confident expectation of finding him ready to receive them. The apparent mystery of the phonograph still continues to draw large numbers of people, most of whom seem to regard it as one of the creations of the Old Nick himself. They listen politely while attendants explain the workings of the machine, but continue to look incredulous, nevertheless, and seem restrained only by a sense of propriety from expressing their unbelief.

CONTINGENCIES OF OLD AGE.

SPECIAL DANGERS ENCOUNTERED BY OLD PERSONS.

Old age has its special dangers and its special safety with regard to disease. For instance, whereas in a child the temperature goes up on the slightest provocation, in old age it can hardly be moved at all. The aged body is not, as a rule, prone to any acute disease. If a person passes eighty, it is rare for him to be seized with any special malady. In injuries such as fractures, though from the lightness and brittleness of the bones they are easily met with, they are repaired solidly and quickly, even in centenarians. Slight shocks cause severe depression, but greater injuries are surmounted, and surprising recoveries made from severe maladies. Wounds and ulcers often heal quicker than in the young; the aged recover from attacks of congestion, paralysis, apoplexy, pneumonia, erysipelas, and other affections in a surprising way. Diseases, as we have said, often pass them by. A man may live to be one hundred in a house in which he had typhoid fever himself, and in which many of his children and grandchildren have since died from it. It is probable these favorable results are due to the long time the organs have worked unitedly and helped each other, like old soldiers who pull well together and bear reverses under which younger troops would succumb. There is, on the other hand, a tendency in old age for slight diseases to become chronic. Now, as to the care of old age, the chief points are moderate and digestible food, sufficient warmth, and even quiet life. The chief of the three is the food, or fuel for the lamp of life. While all fixed dieting is bad, where it can possibly be avoided, a few hints can be given that may prove of value. The older a person is after fifty, the less food he requires. Luigi Cornaro, who lived to one hundred, though of a feeble constitution, took 12 ounces of solid food and 14 ounces of fluid daily during the latter part of his life; and his most severe illness was caused by his increasing his allowance, through the continual entreaties of his friends. Very little proteid or animal food is required, and though in many respects false teeth are a great boon to the aged, they may lead to too great a consumption of animal food. It is not the amount of coals we put in a grate that warms the room, but the amount that can be burnt; and the great point is to avoid choking the digestive and excretory organs with excess of food. The food of the nursery is the best in old age. Bread and milk and honey is a capital diet. Milk agrees with nearly all. Hot milk with a little Mellin's food forms an admirable drink at night, and can be kept warm in a hot water jug covered with a cosy. Fruit is wholesome if ripe or well cooked. Fat is good, as cream or fresh butter. Warm food is very suitable. Soup enriched with cream or marrow is light and nourishing. All meals should be regular, and all excesses avoided. Of 800 persons over eighty, 60 per cent. were moderate eaters, 30 per cent. small, and only 10 per cent. large. If weight is being gained, the diet should be decreased. In addition to the after-dinner nap as years creep on, a doze after breakfast and before dinner is often helpful. As to clothing, it should be both warm and light. Fur is an admirable material. The underclothing should be of wool. A sealskin waistcoat is useful, and the feet and hands should be well and warmly clothed. An eider down quilt on the bed, which should be warmed in winter, is a good covering. No aged person should be suffered to get cold in bed. Two A.M. is the hour when most deaths take place, when the temperature of the body is lowest and its powers feeblest. All habits of old people should be respected, and not lightly altered. Whatever excites exhaustion should be forbidden; early rising is therefore bad. Drinking hard water is not good, as it tends to hasten the calcareous changes in the body. Certain common errors in the care of the aged may be here pointed out; some we have already touched on. 1. That the aged require rich and very nourishing diet. 2. That early rising is good for them. 3. That cold

baths invigorate them; whereas they are fraught with imminent danger, and are often fatal. 4. That continual medicines and dinner pills are needed to digest the food; whereas, instead, less should be eaten. 5. That the rooms should be hot; whereas they should be cool, but not cold—65 degrees to 70 degrees. 6. That a fixed diet should be rigidly adhered to; whereas variety is often essential. Old age is of two sorts; that which is natural, and that which is prematurely acquired in youth; and it need hardly be observed that it is only of the former variety we now speak. Self-denial often requires to be practiced by the aged in many ways, though not arbitrarily. All known weak points in the constitution should be jealously watched. No care as a rule surrounds the aged such as guards the young, because they are not in many ways the same objects of interest. But this is not as it should be, nor is it consistent with the Christian profession. In animals, death when it comes is, as a rule, swift. There is, with the vast majority, no old age and debility suffered among them. No long wasting or disease or slow tumors embitter their lives; they are killed by their fellows when their powers fail, and are thus delivered from all these slow tortures by one sharp stroke. This apparent cruelty of nature is thus a merciful provision for those beings who know not the meaning of sympathy. In early ages and in savage life it was the same with man. The skulls found in the gravel beds are all full of teeth, as of those who died early. Now, in advanced civilization, love and care prolong life to a great age. This is not an unmixed good. Almost the very existence of slow decay and long disease has been brought about by the love and care that distiuguish humanity. Hence it is a peculiarly noble and Christian work to lessen the sufferings that in a sense our own care has made possible; and, as far as we are able, to make old age a period of serene sunshine and an unmixed blessing.

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

February.

MEAT.—Beef, mutton, ham, kidneys, liver, venison, sausage, pork.

GAME AND POULTRY.—Grouse, hare, pigeon, chicken, duck, turkey, geese.

FISH.—Bass, cod, crabs, eels, carp, catfish, flounders, halibut, herring, lobsters, mackerel, mussels, oysters, perch, pike, rock-fish, salmon, smelt, white-fish.

VEGETABLES.—Artichokes, beets, beans, cabbage, carrots, celery, garlic, lettuce, onions, parsley, parsnips, potatoes, shallots, spinach, tomatoes, turnips.

FRUITS.—Apples, bananas, grapes and oranges.

PRACTICAL RECIPES.

TOMATO SOUP.—Put a beef soup-bone to boil for an hour in three quarts water, then add half a cup of rice and cook another hour, then put in half a can or one pint of fresh tomatoes, one and a half tablespoonfuls of allspice, one tablespoonful of whole cloves, and cook another hour. Strain through a colander, season with salt and pepper and serve.

STUFFED BEEFSTEAK.—Take a rump steak about an inch thick and cover it with the following mixture: chop a large onion very fine, mix with it a tablespoonful of sage and one of bread crumbs, season very highly with pepper and salt. Roll the steak up and tie it, than bake. When done serve with gravy.

RISSOLES OF KIDNEY.—Parboil four mutton kidneys, then fry them in butter, with a little minced onion, chop them very fine and season highly with pepper, salt and a little sage. Have ready some pieces of pie-crust rolled out thin, put a good spoonful of this in the centre of each piece, close them up and bake.

POUND CAKE WITH COCOANUT.—Beat one pound butter and one pound powdered sugar to a light cream, then mix in three-quarter pound desiccated cocoanut and some lemon flavoring; beat ten eggs to a froth and whip them into the cake. Work in one pound flour, in which is sifted two teaspoonfuls of baking powder, pour into buttered tins, sprinkle cocoanut over the tops and bake in a moderate oven.

ICED COCOA.—Make some cocoa, allowing one teaspoonful cocoa to a cup of milk, sweeten and flavor with vanilla; put it in the freezer and freeze it, but do not let it get as firm as ice cream. Serve in little cups set in saucers with some ice-cold whipped cream on top of each cup.

SPANISH ONIONS.—Select a large, fine Spanish onion, put it in boiling water and parboil it, remove from the fire and throw it into cold water, then dry it and scoop out the insides, and fill the cavity with equal parts of fine sausage meat and mashed potatoes mixed with the yolk of an egg; bake. Fry a piece of ham quite brown, make a good gravy, pour it around the ham on the dish, put the onion on top of the ham and serve very hot.

STALE ROLL PUDDING.—Cut some light rolls into thin slices and line a well-buttered baking dish with them. Pound one-quarter pound almonds in a mortar with a teaspoonful of powdered cinnamon, two tablespoonfuls of sugar, and the grated rind and a very little juice of a lemon. Sprinkle some of this over the rolls, then put on another layer of rolls, and then the rest of the almonds. Put little bits of butter on top. Over all pour a quart of milk in which is beaten eight eggs and sufficient sugar to sweeten. Bake in a moderate oven; turn out when done, and serve with wine sauce.

NEWSPAPER PICTURES.

HOW THE ILLUSTRATIONS OF THE DAILY PAPERS ARE MADE.

The illustration of newspapers is a new branch of art. Ever since its beginning its apprentices have been trying to find out the simplest and most effective methods for the reproductions of drawings, in order that they might be made with the greatest possible quickness, engraved on metal with the utmost attainable celerity, and printed clearly and well at the rate of twenty thousand copies per hour. To such perfection have the processes for this purpose been brought, that the turning out of pictures all ready for the lightning presses is nowadays hardly more than a matter of a few minutes' time. Most interesting of the processes employed in newspaper illustration, from the point of view of simplicity, is what may be termed the "chalk method." Take a thin bed of smooth chalk laid upon a metal surface, and draw upon it with a fine steel point any picture you may desire. The steel point will cut the lines of the picture out of the chalk to the metal, and thus you will have it in the shape of an intaglio. Make a stereotype from this intaglio, and you have your metal plate to print the picture from. Could anything be more simple? Such is the idea of the chalk process. In applying it, instead of pure chalk various mixtures are used, such as plaster of Paris, which is merely chalk in another shape, with a certain proportion of a white Carolina clay. The stuff, pulverized and stirred up with water, is spread over a rectangular sheet of polished steel, as you would spread a slice of bread with butter, to an even thickness of about one thirty-second of an inch. Now you are ready to begin operations as soon as you have baked the steel plate in an oven for a while, until the chalk layer has been rendered perfectly hard. It will hardly do for you to attempt to draw your picture directly upon the chalk, lest you make mistakes. The best way is to make your sketch on a piece of paper, and then laying it down upon the chalk surface, go over the lines with a pencil point, which will indent the paper, and leave marks beneath upon the chalk. Lift the drawing, and you find under it, in the chalk, its reproduction. Now you apply your steel point directly to the chalk, cutting all the lines of the drawing down through the chalk to the surface of the steel plate. When you finish this operation the dark steel of the plate shows through the chalk in all the lines of the sketch. And these lines are perfectly clean and sharp, thanks to the keenness of the knife-like steel point employed. All you have to do for the rest is to pour molten lead over the chalk surface in a mould and let it get cold. The lines that are cut out of chalk will be reproduced in relief upon the lead, and thus you will have your metal engraving to print the newspaper picture from, mounting it for the purpose on an iron block thick enough to make it level with the type. Though so advantageous for its simplicity, the chalk method is not so good for fine work in the way of sketches and portraits as the "zinc process," so called. The former, however, by reason of its cheapness, is most useful to provincial newspapers, which cannot afford the comparatively expensive photographic plant required by the latter. In the zinc process, to begin with, an ordinary photograph reduced to the required size is taken with a camera of the pen and ink sketch drawn on cardboard by the artist. Next a smooth plate of zinc is "flowed over" with an albumen solution that forms a sensitized skin on the surface. The glass negative of the picture is laid upon the zinc plate and the two are put together in the sunlight. What are to be the black lines of the printed drawings are, of course, white and transparent in the negative. The sunlight goes through wherever the negative is transparent, and has the effect of hardening the sensitized skin beneath, so that it clings tightly to the zinc. It requires only one minute to perform this operation. Now the zinc plate is taken and given a coating over the sensitized skin of lithographer's ink, rubbed on with a roller, after which the plate is washed. In all places where the sunlight has not struck the zinc, owing to the opacity of the glass negative, the sensitized skin readily washes off, together with the ink that covers it; elsewhere it clings. Thus, after the washing, the perfect drawing in ink remains upon the zinc plate. To make the ink lines harder the plate is brushed with powdered dragon's blood. Then it is plunged into a bath of acid, which eats away the zinc wherever it is not protected by the ink, so that when it is taken out the lines of the drawing are found all raised above the rest of the surface of the plate, like a map for the blind, and when mounted "type high" on a metal base, you have your "cut" ready to print from. Such is the zinc process. "Processes" have infinitely multiplied within the last few years—so much so, in fact, that the student of engraving is aghast at contemplating their variety. At present, however, the zinc method seems to be the most avaliable for journals of the period. At all events, it is employed by a majority of the big newspapers of the country. Considerably used for newspaper illustration is that of photo-engraving, which somewhat resembles the zinc method. A glass plate, however, is used instead of a metal one. This glass plate is covered with a thin layer of sensitized gelatine, which is permitted to dry. Then the photographic glass negative of the drawing, made with the camera, just as in the other case, is laid over the gelatine, and the glass plate and negative, with the gelatine layer between them, are put in the sun for half an hour. The light hardens the gelatine, and makes it cling to the glass plate wherever it strikes through the negative, so that when the glass plate is subsequently put into water all the rest of the gelatine comes off, leaving the drawing on the glass in gelatine lines. Moist plaster of Paris is spread over the plate next and permitted to harden. When it is taken off it is a mould of the drawing. From this mould a plaster "relief" is made, and a reproduction of metal in this relief by stereotyping is the plate to print with. These are the three methods by which newspapers produce the pictures which go so far to brighten up and help out the interest of the columns of the daily press.—*Washington Star.*

THE TRUTH ABOUT COCOAS.

Breakfast cocoas are merely cacao nibs roasted and partially deprived of their cocoa butter, thus making them more soluble and digestible. This method of preparation originated in England, but was soon taken up in the United States, France, Germany and Holland. In the United States the house of Walter Baker & Co., who have been chocolate manufacturers since 1780, were the first to take it up, and have been for many years favorably known as the makers of a favorite and pure brand of breakfast cocoa. This has been sold at the uniform price of fifty cents per pound, no doubt yielding a satisfactory profit to the manufacturers, who are counted among the wealthy firms of Massachusetts. They have always claimed that all the goods sold by them are pure and wholesome, and analyses made by different chemists have fully borne them out in these claims. The State laws of Massachusetts are very strict in regulating the sale of food products, and prohibit the sale of any impure article. The State chemists of Massachusetts have never found any cause to complain of this brand of goods, which is the strongest evidence that they are strictly pure. The reputation of this firm has always been that they made only the best goods, and their sales are increasing so rapidly that we must take it for granted that those who use them have found them satisfactory. For the year or two just passed we have beheld the curious spectacle of one or two firms from Holland advertising largely a brand of cocoa which they claim is superior to any Americans have yet known, and forsooth demand double the price heretofore paid for the American brand, which has been so far satisfactory to those who have used it. If this is anything more than an endeavor to take advantage of a suppositious snobbery of Americans, under the delusive idea that we will pay double price for a foreign article, there ought to be something about these Dutch cocoas that would show it. Careful chemical analyses of these Dutch cocoas have shown the presence of adulterations with the indigestible but weight-making cocoa shells, and the use of certain chemicals to make these Dutch cocoas more soluble, while competent judges inform us that the Dutch cocoas are not made from as choice or expensive cacao beans as our American. It is therefore not because these Dutch cocoas are any more valuable that double price is demanded for them, but must be to enable these foreign manufacturers to advertise more extensively, and thus attempt to force their inferior goods upon our market. It is well known that the retail grocers have not found it to their interest to push these foreign goods, as their experience has shown that the consumer does not like them as well, and cannot see any reason why they should pay one dollar for an inferior article while a much better article can be bought for fifty cents. The retail grocer generally keeps what his trade demands, and undisputed facts show that consumers prefer the American cocoa. A show of trade may be made for a time by consigning goods, but this will not work in the long-run. The American cocoa manufacturers have never been compelled to consign their goods. Another dodge lately resorted to is that of advertising that the demand for these foreign goods has been so extraordinary that they must stop advertising because they are unable to fill their orders and must build a new factory, requiring three years to finish it. That is the flimsiest tissue yet blazoned forth, and altogether too irrelevant to attempt to impose upon intelligent Americans. Be this as it may, however, we will here give a simple test by which every one can judge of the relative merits of these goods. Dissolve two teaspoonfuls of the two competing cocoas in two tumblers half full of water; stir and let stand forty-eight hours, then smell of each. Your nose will quickly enable you to decide whether it is best to stick to your old American friend or not.

TOMATO DISEASE.—A singular disease has recently been called to the attention of physicians. It is a form of recession of the gums of the superior molars, which is said to be due to the use of tomatoes as food.

CLEVELAND'S
SUPERIOR
Baking
Powder.

The Official Reports of the
United States Government, 1889,
Canadian Government, 1889,
New Jersey Commission, 1889,
Ohio Food Commission, 1887,
prove that Cleveland's is

THE STRONGEST

of all the pure* cream of tartar baking powders.

*Ammonia or alum powders, whatever their strength, should be avoided as injurious.

25 CTS PISO'S CURE FOR 25 CTS
CURES WHERE ALL ELSE FAILS.
Best Cough Syrup. Tastes good. Use in time. Sold by druggists.
CONSUMPTION

Buffalo Lithia Water, Spring No. 2, in Bright's Disease, Gout, Stone in the Bladder, and Diseases Generally of Uric Acid Diathesis, Etc., Etc.

DR. WM. A. HAMMOND, of Washington, D. C., Surgeon General U. S. Army (retired), Professor of Diseases of the Mind and Nervous System in the University of New York, etc.

"I have for some time made use of the BUFFALO LITHIA WATER in cases of AFFECTIONS of the NERVOUS SYSTEM, complicated with BRIGHT'S DISEASE OF THE KIDNEYS or with a GOUTY DIATHESIS. *The results have been eminently satisfactory.* Lithia has for many years *been a favorite with me in like cases, but the* BUFFALO WATER CERTAINLY ACTS BETTER THAN ANY EXTEMPORANEOUS SOLUTION of THE LITHIA SALTS, and is, moreover, better borne by the stomach. I also often prescribe it in those cases of CEREBRAL HYPERÆMIA resulting from OVER MENTAL WORK—in which the condition called NERVOUS DYSPEPSIA exists—*and generally with* MARKED BENEFIT."

DR. WM. B. TOWLES, Professor of Anatomy and Materia Medica, in the Medical Department of the University of Virginia.

"BUFFALO LITHIA SPRINGS, No. 2, belongs to the ALKALINE or, *perhaps, to the* ALKALINE SALINE Class, *for it has proved far more efficacious in many diseased conditions than any of the simple* ALKALINE waters.

"*I feel no hesitancy whatever in saying that in* GOUT, RHEUMATIC GOUT, RHEUMATISM, STONE *in the* BLADDER, and in all diseases of URIC ACID DIATHESIS, *I know of no remedy at all comparable to it.*

"*Its effects are marked in causing a disappearance of* ALBUMEN *from the urine. In a* single case of BRIGHT'S DISEASE *of the* KIDNEYS, I witnessed *decided beneficial results from its use, and from its action in this case I should have great confidence in it as a remedy in certain stages of this disease.* In DYSPEPSIA, especially that form of it in which there *is an excessive production of* ACID *during the process of nutrition*, in some of the PECULIAR AFFECTIONS *of* WOMEN, notably in SUPPRESSION of the MENSES, and in CHRONIC MALARIAL POISONING, etc., I have found it highly efficacious."

DR. G. HALSTEAD BOYLAND, late Professor of Surgery, Baltimore Medical College, late Surgeon French Army (Decorated), Member Baltimore Academy of Medicine, Member of American Medical Association.

"In BRIGHT'S DISEASE of the KIDNEYS, ACUTE or CHRONIC, BUFFALO LITHIA WATER, Spring No. 2, is, in my experience, *without a rival*, whether in the PARENCHYMATOUS form or INTERSTITIAL NEPHRITIS. In cases in which the ALBUMEN in the URINE reached as high as 50 per cent., I have known it under a course of this water gradually diminish and finally disappear, at the same time other alarming symptoms were relieved and the sufferers restored to health.

"In STONE in the BLADDER of the RED LITHIC ACID and the WHITE PHOSPHATIC DEPOSIT, the SOLVENT power of this water is *unmistakable*."

Water in cases of one dozen half gallon bottles, $5.00 f. o. b. here.

THOS. F. GOODE, Proprietor, BUFFALO LITHIA SPRINGS, VA.

AN OLD ESTABLISHED COMPANY.

A company that has been established for more than thirty years in this city certainly has something to be proud of, and when it is said that the Great American Tea Company, of 31 and 33 Vesey Street, has been in successful operation for more than thirty years, it goes without saying that the goods they offer to the public are exactly what they are represented to be. The teas and coffees which are sold by the Great American Tea Company are now known from one end of the country to the other. If any of the readers of THE AMERICAN ANALYST have never dealt with this Company, it is suggested that a trial order be sent to them. If two dollars is enclosed to them, three and a half pounds of Oolong, Japan, fine English breakfast, or any other popular kind of tea, will be sent, and if one order is sent others are sure to follow. Address the Great American Tea Company, 31 and 33 Vesey Street, this city.

LYSOL.—Among the latest disinfectants is "lysol," which appears to be very much like carbolic acid. The emulsifying agent is resin or fat soap, tar acid being incorporated with the soap at the moment of saponification.

ELECTRIC DRUGS.—In Germany iodoform is being made by use of the electric current. An alcoholic solution of iodide of potassium traversed by a current of carbonic acid is subjected to the electric current, and iodoform is produced in the shape of small yellow capsules.

INGENIOUS CLOCK.—The chronologe of the Rev. Canon Cinquemani is an ingenious clock, and consists of a single-toothed escape wheel, which propels a pair of pallets and the pendulum. In addition to this there is a chain of lead balls, one of which is discharged over a revolving drum every quarter of an hour. These keep the escape wheel going and by another contrivance strike the hours and quarters.

ELECTRICAL POWER.—Electricity is about to be used as a motive power in a mining district of Colorado which has been handicapped heretofore by the great cost of fuel and the difficulty of getting it. There is abundant water-power in the neighborhood, but not at the places where power is wanted. It will be an easy matter, however, to use the water-power for the generation of electricity, transmit the latter by wire to any desired place within a reasonable distance, and there convert it into power. Thus, by the agency of the dynamo and with the aid of water-power mines may be devloped that could not be worked if the generation of power depended upon the transportation of coal or other fuel from distant States. This is a happy illustration of the application of inventions to particular uses. Nothing new is to be used, but the projectors have simply found a place where the combination of known machines and processes will yield them the power they require at less cost than local steam-engines.

Fine Table Wines

From our Celebrated Orleans Vineyard.

Arpad Haraszthy & Co.

Producers of the

ECLIPSE

CHAMPAGNE,

530 Washington St.

SAN FRANCISCO.

GENERAL AGENCIES:

NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOSEPH R. PEEBLES' SONS CO., 73 West Fourth Street
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave
HONOLULU, H. I.: HAMILTON JOHNSTON.

Have You? Many Millions Have



accepted James Pyles' invitation, to try his wonderful discovery *Pyle's Pearline; for easy washing and cleaning.* You couldn't count them in a lifetime. Some of the twelve million housekeepers in this land must have accepted very often. That's the way with Pearline. The wise woman who investigates, tries it; the woman who tries it continues to use it. A daily increasing sale proves it. The truth is, there's nothing so acceptable as Pearline. Once accept its help, and you'll decline the imitations—they don't help you. It washes clothes or cleans house. It saves labor and it saves wear. It hurts nothing, but it's suited to everything. Try it when it suits you, for it will suit you when you try it.

Beware Peddlers and some unscrupulous grocers will tell you "this is as good as" or "the same as Pearline." IT'S FALSE—Pearline is never peddled, and if your grocer sends you something in place of Pearline, do the honest thing—*send it back.* 175 JAMES PYLE, New York.

A LARGE AND VALUABLE

Cook Book Free



We are enabled to offer our readers a most attractive combination, by which all may obtain a copy of the "Modern Cook Book" absolutely free. This handsome and valuable Cook Book has

320 Pages, Over 1,200 Recipes and Hundreds of Illustrations.

The recipes are the choicest selections from 20,000 that were received from practical housewives living in all parts of the United States, to which were added hundreds of the newest, best and most practical recipes of this progressive age, all of it set in new and large type, and the whole book handsomely illustrated.

IT HAS A BEAUTIFUL, ILLUMINATED COVER.

It is an elegant and admirably arranged volume of recipes for practical, everyday use. Among its points of excellence are the following:

Practical Suggestions to Young Housekeepers, Necessary Kitchen Utensils, Suggestions and Recipes for Soups, Fish, Poultry, Game, Meats, Salads, Sauces, Catsups and Relishes, Breakfast and Tea Dishes, Vegetables, Bread, Biscuit, Pies, Puddings, Cakes, Custards, Desserts, Cookies, Fritters, etc. Also for Preserves, Candies and Beverages; Cookery for the Sick, Bills of Fare for Family Dinners, Holiday Dinners, etc. A Table of Weights and Measures; Chapters on the Various Departments of Household Management and Work.

IT WOULD BE CHEAP AT $1,

As it is the Latest, Best and Most Practical Cook Book Published, More Nearly Meeting the Wants of American Homes than any other.

Any person accepting our offer will receive this paper one year, and also that charming home journal, the Ladies Home Companion, one year, together with the Cook Book, all mailed, postpaid, for less than the regular price of the two papers alone.

The Cook Book is offered absolutely free to induce thousands of our readers to become acquainted with the Ladies Home Companion, the publishers looking to the future for their profit, as they believe you will always want the Ladies Home Companion if you try it one year. Do not lose this opportunity to get the newest and best Cook Book free.

THE LADIES HOME COMPANION is a large and popular 16-page journal, published **twice a month**, and gives information about those things which ladies particularly wish to know, and is mostly written by ladies. **Original or Selected Stories** by eminent authors are found in each issue. A special feature is the variety of departments, each of which is conducted by a special editor. It gives the latest **Fashions**, arranged for practical use; timely hints to **Housekeepers**; cheering and helpful talks with **Mothers**; valuable information for lovers of **Flowers**; a pretty and pleasant page for pretty and pleasant children. All handsomely illustrated. It is not an ultra fashion paper, but a journal for the home circle, full of common-sense ideas and suggestions for home happiness and comfort.

OUR OFFER Send us $1.00 and you will receive **The American Analyst** one year, and also the **Ladies Home Companion** one year (24 numbers). And every one accepting this offer will also receive the above Cook Book, postpaid.

This offer is extended to **all** our subscribers. Subscribers whose subscriptions have not expired, or those recently renewed, are privileged to accept this GREAT OFFER, in which case their term of subscription will be extended one year.

Address THE AMERICAN ANALYST, 19 Park Place, New York.

THE N. Y. HAY EXCHANGE BULLETIN.

OFFICIAL REPORT OF THE HAY AND STRAW MARKET AT NEW YORK.

COMMISSION SALESMEN.

NOTICE.

These names are arranged alphabetically.

WM. AFFLECK & CO.,
Commission Merchants in
HAY AND STRAW,
Office No. 5,
N. Y. Hay Exchange Building.

J. ALSDORF,
Commission Dealer in
HAY AND STRAW,
33d Street and 11th Ave.,
NEW YORK.

E. A. DECKER. F. W. TOMPKINS.
DECKER & TOMPKINS,
Commission Merchants in
HAY, STRAW, GRAIN,
Office: 16 New York Hay Exchange Building.

L. S. DILLENBACK. T. O. PECK.
DILLENBACK & PECK,
MAIN OFFICE:
Room 0, N. Y. HAY EXCHANGE, N. Y. City.
STOREHOUSE AND BRANCH OFFICE:
101, 103 and 105 North 5th St.,
and 152 and 154 Berry St.,
Palmer's Dock. Brooklyn, E. D.

EDWIN B. DUSENBERRY,
COMMISSION MERCHANT,
And Wholesale Dealer in
HAY, STRAW AND GRAIN.
No. 1, N. Y. Hay Exchange, New York.

THOS. FONDA & CO.,
Commission Merchants
And Dealers in Hay, Straw, Grain and Country Produce,
13 & 14 N. Y. Hay Exchange Building.

N. A. FULLER,
COMMISSION MERCHANT IN
HAY AND STRAW,
33d Street and 11th Ave.,
NEW YORK.

THEO. P. HUFFMAN & CO.,
COMMISSION MERCHANTS
In Hay, Straw, Grain, Feed, &c.,
648 & 650 West 34th Street,
Bet. 11th & 12th Aves., N. Y.

H. B. Jenkins. F. S. Williams.
JENKINS & WILLIAMS.
COMMISSION MERCHANTS IN
HAY, STRAW AND GRAIN,
HAY EXCHANGE.

The N. Y. Hay Exchange is located at 601 W. 33d St., corner 11th Avenue.

Only the cards of members of the N. Y. Hay Exchange appear on this page.

RULES FOR GRADING HAY AND STRAW

As Adopted by the N. Y. Hay Exchange.

CHOICE OR PRIME HAY—Shall be pure timothy, properly cured, bright, natural color, sound and well baled. No. 1—Shall be timothy, not more than one-eighth (⅛) mixed with "red top" properly cured, bright natural color, sound and well baled. No. 2—Shall be timothy, not more than one-quarter (¼) mixed with red top and blue grass, properly cured, good color, sound and well baled. No. 3—Shall include all timothy not good enough for No. 2, proportionately mixed with blue grass, red top, and clover, sound and well baled. SHIPPING—Shall include all hay not good enough for other grades, and may be natural meadow, free from wild or bog grass, and must not contain over one-third (⅓) clover, sound and well baled. CLOVER MIXED—Shall include all hay containing not over two-third (⅔) clover, and one-third (⅓) timothy, properly cured, sound, and well baled. CLOVER—Shall be medium grown, properly cured, good color, sound, and well baled. NO GRADE OR REJECTED HAY—Shall include all hay badly cured, musty, stained, or in any way unsound.

No. 1. RYE STRAW—Shall be clean, bright, long Rye, in bundles, sound, well and securely baled. No. 2—Shall be long Rye, in bundles, sound, well and securely baled. SHORT RYE—Shall be clean, not bundled, sound, well and securely baled. OAT STRAW—Shall be clean, bright, sound, well and securely baled.

In the New York market bale-wood is weighed in without tare. In all other markets it is deducted.

These quotations for choice, No. 1 and No. 2 hay are for large bales. 5c. per cwt. less when in perpetual press bales.

The New York quotations are per cwt. At other points, per ton.

NEW YORK, Feb. 16, 1891.

The following are the market prices to-day at New York.

	Large Bales.	Small Bales.
Fancy Hay	65c @	60c @
Prime	60 @	55 @
No. 1	55 @	50 @ 55
No. 2	50 @	45 @
No. 3	40 @ 45	40 @
Shipping	40 @	— @ —
Prime Rye Straw	85 @	— @
No. 2 "	75 @	
Short "	55 @ 60	
Oat and Wheat	40 @ 45	

Fresh movements of Hay have been interfered with this week by stormy weather, so that, while receipts have been a trifle smaller, stock does not show any material decrease.

Common grades have been in greatest request, and supply is not very large.

While we quote 65c. for fancy Hay, we would say that there is very little of this quality arriving, and that it must be gilt-edged to bring the price. Receipts of Rye Straw have been in excess of the demand, and price is weaker. Stock of perpetual Hay is limited, and the better grades are in fair demand.

OSCAR KENT,
Commission Merchant,
HAY AND STRAW,
Room 20, New York Hay Exchange Building.
Personal attention guaranteed all consignments.

JOHN KERWIN & SON,
DIRECT RECEIVERS OF
HAY, GRAIN and GENERAL PRODUCE
DEPOT AND STOREHOUSES,
Palmer's Dock, Nos. 97 & 99 North Fifth Street,
BROOKLYN, N. Y.
SHIPPING ADDRESS, PALMER'S DOCK, BROOKLYN, N.Y.
West Shore R. R., N. Y. C. & H. R. R. R., N. Y. L. E. & W. R. R., Pennsylvania R. R., D. L. & W. R. R., Lehigh Valley R. R., and connections.

W. J. OVEROCKER. PERRY HATCH.
OVEROCKER & HATCH,
Commission Merchants in
HAY, STRAW AND GRAIN.
33d Street & 11th Avenue, New York.
References: West Side Bank, New York City; Exchange Bank, Holly, N. Y.

Gilbert Plowman, NEW YORK. Spencer Billington, FORT HUNTER, N. Y.
PLOWMAN & BILLINGTON
COMMISSION MERCHANTS,
HAY, STRAW, GRAIN, &c.
No. 15 N. Y. Hay Exchange,
33d St. & 11th Ave., NEW YORK.

JAMES ROZELL & SON,
Commission Merchants and Wholesale Dealers in
HAY, STRAW, GRAIN
AND
COUNTRY PRODUCE.
N. Y. Hay Exchange, New York.

SKINNER, BLOOM & CO.,
Successors to Rogers, Skinner & Co.,
COMMISSION MERCHANTS
And Dealers in
Grain, Flour, Hay, Feed, Meal, &c.,
74 CORTLANDT STREET, - NEW YORK.
Barge GYPSIE, Foot Bridge St., Brooklyn.

H. SLINGERLAND,
Barges MERCHANT and HARVEST QUEEN
Foot of West 11th Street,
HAY AND STRAW.
Also, 33d and 35th Streets, and all Railroad terminals. Special facilities for lighterage free goods.

CHARLES F. SWAN,
Commission Merchant in
HAY, STRAW & GRAIN,
At all the Railroad Terminals in New York, Brooklyn, Jersey City, &c.
MAIN OFFICE,
108 BROAD ST., NEW YORK.

TITUS, WELLS & WILLETS,
Commission Merchants and Dealers in
HAY AND STRAW,
133 Roosevelt St.,
NEW YORK.

VAN ALSTYNE & CO.,
COMMISSION MERCHANTS.
SPECIALTIES:
HAY, STRAW & FLOUR,
Nos. 2 and 4 Stone St., New York.
Liberal advances made on consignments.

G. E. Van Vorst. James M. Hillery.
VAN VORST & CO.,
COMMISSION MERCHANTS,
HAY, STRAW AND GRAIN
N. Y. Hay Exchange, 33d St., & 11th Ave.
562 & 564 West 34th St., NEW YORK.

NOTICE.

These names are arranged alphabetically.

HOSMER, CRAMPTON & HAMMOND,

NO. 43 COMMERCIAL STREET,

BOSTON.

COMMISSION MERCHANTS,

HAY, STRAW, FLOUR & GRAIN.

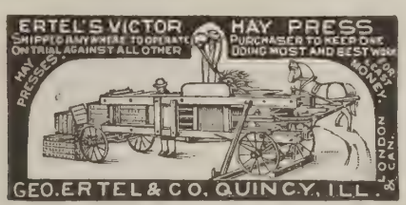
E. B. HOSMER, G. W. CRAMPTON, BENJAMIN HAMMOND, A. L. ROBINSON.

BOSTON HAY AND STRAW MARKET.

Hay, choice to fancy in large bales	$13.00 to	$14.00
Hay, choice to fancy, perpetual pressed bales	12.00 to	13.00
Hay, fair to good	11.00 to	12.00
Hay, poor to ordinary	8.00 to	10.00
Hay, Clover and Clover mixed	8.00 to	10.00
Hay, swale	8.00 to	9.00
Straw, Rye, good to prime	17.00 to	17.50
Straw, Oat	9.00 to	

BOSTON, Feb. 20th, 1891.

The receipts for the week are 303 cars of Hay and 30 cars of Straw. The receipts of Hay the past week have not been quite as large as for some weeks previous, but they are still in excess of the demand. The stocks on the tracks and in the depots of the various railroads are large, and the railroads are crowding receivers to move same promptly. Market continues dull and weak. Quotations are nominal. Rye Straw and Oat Straw are dull and easier.



H. F. WILSON,

WIRE BALE TIES,

458 WEST 38th STREET, New York.

40 COUPON OFFERS

and our large Illustrated Catalogue of SCROLL SAWS, Tools, Designs, and **30 Cts. WORTH** of *full size* SCROLL SAW DESIGNS, sent FREE for 10 Cts. in stamps to pay postage.

JOHN WILKINSON CO., 269 State St., Chicago.

HAMMOND'S

CELEBRATED

Calumet Oleomargarine

Strictly pure, cheap and healthful.

Ask your grocer for it.

Put up in packages of all sizes, also prints and rolls.

C. H. HAMMOND CO.,

607 to 615 THE ROOKERY,

CHICAGO.

Also offices at Boston, South Omaha, Neb., and Hammond, Ind.

SWIFT'S

CHOICE

Chicago Dressed Beef

AND

MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,

UNION STOCK YARDS,

CHICAGO, ILLS.

PUBLICATIONS OF THE

ANALYST PUBLISHING CO.

THE AMERICAN ANALYST.
Weekly. Every Thursday. $1 per year.

THE ROOFER, TINNER AND SHEET-IRON WORKER.
Monthly. 15th each month, $1 per year.

THE LEATHER MANUFACTURER.
Monthly. 1st each month. $3 per year.

Reliable agents and representatives wanted everywhere on liberal terms. Address

ANALYST PUBLISHING CO.,

19 PARK PLACE, NEW YORK.

NATURAL MINERAL PURGATIVE WATER,

From the Springs of

VILLACABRAS.

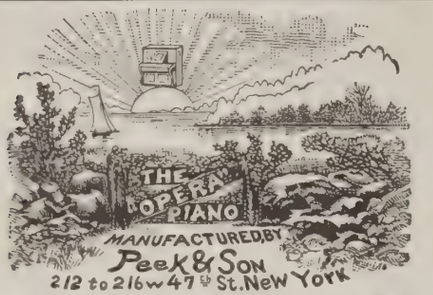
Prescribed by the Highest Medical Authorities.

Stronger effects than any other under smaller volume. No smell—no repulsive taste—no after-constipation—no gripes. As a daily laxative it can be taken either pure or mixed with milk, tea or broth.

Sold by all Good Druggists.

HARTSHORN'S SELF-ACTING SHADE ROLLERS

NOTICE SCRIPT NAME OF Stewart Hartshorn ON LABEL, AND GET THE GENUINE HARTSHORN



A HIGH-GRADE PIANO

AT A VERY MODERATE PRICE.

NEW DESIGNS. FANCY WOODS.

Terms Easy. + Monthly Instalments.

TWO, THREE AND FOUR PEDALS.

Catalogues, Prices, Terms, Etc., sent to any address.

EVERY PIANO WARRANTED 5 YEARS.

(Mention this Paper.)

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,

HOWARD STREET, BOSTON, MASS.

GOLD MEDAL, PARIS, 1878.



W. BAKER & Co.'s Breakfast Cocoa

from which the excess of oil has been removed,

Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

"BILLET"

are

Carefully Selected French Sardines,

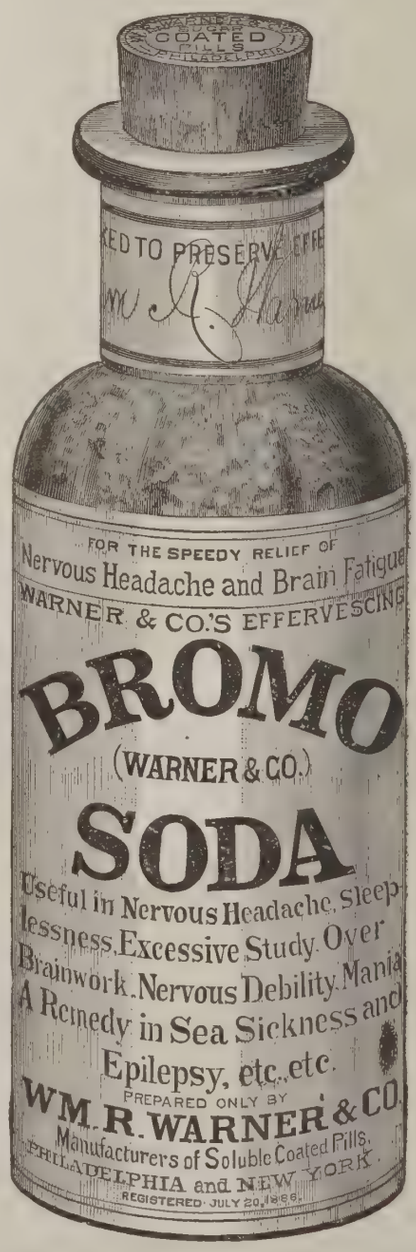
Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS

BROMO SODA.

Useful in Nervous Headache, Sleeplessness, Excessive Study, Over Brainwork, Nervous Debility, Mania, Etc.

DOSE—A heaping teaspoonful in half a glass of water, to be repeated once after an interval of thirty minutes, if necessary. Each teaspoonful contains 30 grs. BROMIDE SODIUM and 1 gr. CAFFEIN,



SUPPLIED BY ALL DRUGGISTS

Ask for (Bromo-Soda, Warner & Co.) and take no other "Bromo."

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.

MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.

STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

LEA & PERRINS' SAUCE



In consequence of Imitations of LEA & PERRINS' SAUCE, which are calculated to deceive the public, LEA & PERRINS beg to draw attention to the fact that each bottle of the Original and Genuine

WORCESTERSHIRE SAUCE

bears their Signature thus—

Lea & Perrins

For Sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS, NEW YORK.

RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,
184 Greenwich St., N. Y.

BLAIR'S PILLS.



Great English Remedy for GOUT, RHEUMATISM and KIDNEY COMPLAINTS.

SURE, PROMPT and EFFECTIVE.

Large Box, 34; Small, 14 Pills.

At all Druggists, and

224 WILLIAM STREET, NEW YORK.

RIDGE'S FOOD The MOST RELIABLE FOOD For Infants & Invalids. Used everywhere. *Not a medicine*, but a steam-cooked *food*, suited to the weakest stomach. Pamphlet free. Woolrich & Co., (on every label). Palmer, Mass.

Pure LAGER BEER,

"IMPERIAL" and "CULMBACHER"

Brewed & Bottled

SPECIALLY FOR

HOTELS, CLUBS

AND

PRIVATE FAMILIES

BY

Beadleston & Woerz

291 W. 10th St. New York.

Orders by Postal Card promptly attended to.



C-U-R-E-S

DIARRHŒA, DYSENTERY,

MALARIA,

all ailments of the bowels. Is an anti-dyspeptic, and a **DELICIOUS INVIGORATIVE.** Leading Physicians prescribe it for **ADULTS AND CHILDREN.** *FOR SALE* by Druggists and dealers.

RHEINSTROM BROS., DISTILLERS OF FINE LIQUEURS,
54, 56, 58, 60, 62 E. 3rd STREET, CINCINNATI, O.



We shall be glad to supply our readers with any periodical published at club rates.

Send us a postal naming periodical and we will quote you prices.

ANALYST PUBLISHING CO.,
19 Park Place,
New York.

Don't kick



because your business is bad, but advertise If you don't know how to, write to us and we will tell you.

We will prepare your advertisement or give you advice and assistance to aid you in preparing it yourself. We will have the advertisement set in type and procure illustrations if any are needed. When a satisfactory advertisement has been produced we will furnish proofs and an electrotyped pattern to be used in duplicating the advertisement if the display or illustration make an electrotype desirable.

Address GEO. P. ROWELL & CO.,
Newspaper Advertising Bureau,
10 Spruce St., N. Y.

DR. PRICE'S CREAM Baking Powder

Most Perfect Made

A Pure Cream of Tartar Powder—
Superior to every other known.
Used in Millions of Homes—40 Years the Standard.
Delicious Cake and Pastry, Light Flaky Biscuit, Griddle Cakes
Palatable and Wholesome.
No other baking powder does such work.

THE GREAT AMERICAN TEA COMPANY

LADIES GET UP ORDERS.
Entire New Departure.
A HANDSOME PRESENT TO EVERY SUBSCRIBER.
THE GREATEST INDUCEMENTS
EVER KNOWN TO INTRODUCE OUR NEW GOODS.

If you enjoy a cup of **Delicious Tea** send in your orders. 3½ lbs. Fine Tea by mail on receipt of $2 and this "ad". Beautiful premiums given away with $5 orders and upwards. The **most extraordinary bargains** ever offered, during the next thirty days. China Tea Sets and Lamps with $10, $15 and $20 orders to introduce our excellent **New Crop Teas.** Formosa and Amoy, Oolong, Congou, English Breakfast, Japan, Imperial, Young Hyson, Gunpowder, Sun Sun Chop and Mixed. Good mixed teas 20c. per lb. Headquarters in United States for Fine Teas. One pound of our tea will go farther than three pounds of trash. Thirty years' national reputation for selling **Pure Goods Only.**

THE GREAT AMERICAN TEA COMPANY,
P. O. BOX 289. 31 and 33 Vesey Street, New York.

Tabasco Pepper Sauce
OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced, by connoisseurs, to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY,
NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

GLENN'S SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,
C. N. CRITTENTON,
115 FULTON STREET,
NEW YORK.



THE CENTURY DICTIONARY
comes nearer to being a complete catalogue of the English language than any dictionary ever published. But it is not merely a dictionary: it is an encyclopedia of common things as well. It has been ten years in preparation. The leading scholars of the country have contributed to its pages. It is the latest dictionary and it ought to be, and is, the best.

A large descriptive pamphlet containing full-size sample pages, etc., will be mailed to any one sending five 2-cent stamps to
THE CENTURY CO., 33 East 17th St, New York.

Be progressive and keep abreast of the times. Avoid dyspepsia by using **Lard Compound** and **Cottolene,** a substitute for lard.

The highest medical authorities pronounce them healthful; and expert cooks commend them.

Our **Clairette** brand of cotton oil soap is the purest and best laundry soap in the market; as pleasant to the hands as genuine castile.

N. K. FAIRBANK & CO.,
CHICAGO AND ST. LOUIS.



AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 10. NEW YORK, THURSDAY, MARCH 5, 1891. WHOLE No. 210

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - $1 per year.
Single Copies, - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.

Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.

Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,

H. LASSING, M. D., *Editors.*
T. P. McELRATH,

No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

African Currency 111
Congress and Pure Food 110
Domestic Dietetics 113
Editorials 109
Blood Purifiers; Sleeping Car Rights; Is Salicylic Acid Harmless; A Risky Improvement; Thumb Identification.
Hay Market Official Bulletin 116
Headache 111
Interior of the Earth 113
Opals 112
Purity and Imposition 112
Women's Work 113

BLOOD PURIFIERS.

The notion that the blood can be "purified" by the direct action of medicines is a popular fallacy, originating in ignorance, and largely sustained by the mendacious pretences of quacks and charlatans. The *Journal of Commerce*, of this city, some time since set its foot down on this absurdity in replying to a correspondent who inquired for "the best remedy for purifying the blood." Our contemporary's response was virtually as follows: Ever since the vendor of a celebrated patent medicine advertised throughout the Union, "One disease hast thou only, an impurity of the blood," for which his pills were set forth as an infallible specific, the popular mind has turned towards nostrums of some kind to relieve the vital currents of their irritating foulness. Nature has machinery of her own specially designed for this purpose. The blood vitalized by the breath goes out in the arteries a bright red color, and comparatively clear of noxious particles. It enters the veins, where it picks up a very large part of what may be called the entire waste of the system, and flowing back to the centre, it is almost black and fairly turbid with what it has gathered on this circuit. When it reaches the lungs it is poured into them to be purified. Fresh, pure air is the instrument of cleansing. The lungs exhale the foulness, and inhale new life and purity, which, coming in contact with the huge volume of the circulation, changes at once the color and character of the blood, and sends it out again with its old ruddy hue. The process is rapid, and when the air is full of oxygen, and is not itself vitiated, it is thorough. To check this movement wholly is death in a very few seconds of time. But it can be impaired by inhaling an impure atmosphere, or breathing over again the air that has been expelled from the lungs charged with carbonic acid gas, and which has no chance to recover tone by mixing with a purer current. Go into a small closet and shut the door. The atmosphere soon becomes filled with the foulness brought by the venous blood to the lungs and poured out in exhalations. In a few minutes it is stifling, and death finally ensues. What is thus done on a deathly scale is partially accomplished by sleeping in a small room where no fresh air is admitted, or by working all day in a close and ill-ventilated apartment. Nothing taken into the stomach will purify the blood. Exercise quickens the circulation, and if, while the currents are thus made more active, sufficient fresh air is supplied, the purifying process is rendered most effective. The blood may be rendered more impure by what is eaten, as it picks up the offensive matter thrown into the system after digestion. But the purification is done in the lungs, and reasonable exercise in the open air is the only solution of the problem.

SLEEPING CAR RIGHTS.

The travelling public owe a debt of gratitude to those belligerent fellow passengers who insist upon their rights, and, failing to obtain them, appeal to the courts and fight their cases through to the end. Not long ago a passenger on a Minnesota road objected to the upper berth being put down when not occupied. The railroad officials merely laughed at his objections. But he took the matter into court, and that tribunal sustained him. Now all sleeping-cars in that State are obliged to conform to this decision. Two analogous cases have just been decided in New York, which define still further the rights of passengers, and the duties of the railway companies. Mr. Charles H. Dwinelle was a passenger on the New York Central. He had purchased tickets for a section in a sleeping-car on the train. Owing to a washout the passengers were compelled to change cars. The porter conducted Mr. Dwinelle and his wife from one train to the other, and Mr. Dwinelle asked him to restore his sleeping-car ticket or make him acquainted with the conductor of the second train, so that he might not have to pay over again. At this request the porter became incensed and struck Mr. Dwinelle a blow in the face, knocking him down and rendering him unconscious. In the Trial Court and at the general term of the Supreme Court it was held that the railroad company was not responsible, but that the New York Central Sleeping-car Company, which employed the porter, was solely liable. The Court of Appeals, however, decided otherwise, holding that the porter of a sleeping-car is the servant of the railroad company in whose train the car is run, and the case was sent back for a new trial, with a direction to submit the facts to a jury, in order that they might determine whether the porter was in the performance of his duties at the time of the assault. Another case was that of Philip Carpenter *vs.* the New York, New Haven & Hartford Company. He left New York city at 10½ P.M. and immediately went to bed, placing his vest containing forty dollars, under his pillow. Upon waking in the morning the pocketbook which contained the money was still in the vest, but the money was gone, so was the person who had occupied the berth above him. Mr. Carpenter sued the company to recover the amount of his loss, but was unsuccessful in the New York City Court, as well as in the Court of Common Pleas. The second division of the Court of Appeals, however, reversed the judgment of the courts below and ordered judgment absolute in favor of the plaintiff. Chief Judge Follett held that a "corporation running sleeping-coaches, with sections separated from the aisle only by curtains, is bound to have an employee charged with the duty of carefully and continually watching the interior of the car while berths are occupied. A traveller who pays for a berth is invited, and has the right to sleep, and both parties to the contract know that he is to become powerless to defend his property from thieves, or his person from insult, and that the company is bound to use a degree of care commensurate with the danger to which passengers are exposed. Considering the compensation received for such services, and the hazards to which unguarded and sleeping travellers are exposed, this rule of diligence is not too onerous."

IS SALICYLIC ACID HARMLESS?

Experimental demonstrations have repeatedly shown that salicylic acid possesses no positive action on the system, even when employed in considerable quantities. This indifference, so far as the general system is concerned, is well recognized, and yet it would seem, from recent investigations, that salicylic acid is not altogether free from effect. Its influence is manifested in interfering more or less with the normal functions of the several juices of the body. Thus it will prevent the conversion of starch into sugar, either by diastase or by the pancreatic ferment, but is said not to seriously interfere with either peptic or pancreatic digestion of albumen. Saccharin, which in its inertness closely resembles salicylic acid, exhibits likewise a similar influence upon the action of the ferments as just described.

On the other hand, the common preservatives, sodium acid sulphite and boric acid, are said to possess no effect, whereas beta-naphthol has a positive interference with the diastasic, but none with the pancreatic formation of sugar. The latter, furthermore, prevents almost entirely the peptic and pancreatic digestion of albumenoids. The safe side, however, is to use none of these.

A RISKY IMPROVEMENT.

Smokeless powder, and the results of its use in the battles of the future, are being much discussed by military men. An enemy not concealed behind works will, there is reason to believe, be under considerable disadvantage with no smoke to cover him. Especially is this likely to be the case now that the quick-firing heavy gun has been perfected. During the tests recently made at the Colt factory at Hartford, the newly improved Driggs-Schroder rapid-fire gun sent a quick succession of eight-pound projectiles with unerring aim at a target four miles away. With the advance of cavalry not covered by the smoke of infantry fire till at least near to striking distance, the quick-fire gun is likely to do some terrible work, if not to make such cavalry advances altogether impracticable. Troops operating in the smoke of their own guns can often see across a field to the enemy while he cannot see them, as we can often see out of an enveloping fog bank which those at a distance cannot penetrate. Thus it is a serious question whether the use of smokeless powder by an enemy would not incline to his disadvantage, his adversary meantime being protected by a film of smoke.

THUMB IDENTIFICATION.

At a recent meeting of the Anthropological Institute Mr. Francis Galton, F. R. S., exhibited a large number of impressions of the bulbs of the thumb and fingers of human hands, showing the curves of the capillary ridges on the skin. These impressions are an unfailing mark of the identity of a person, since they do not vary from youth to age, and are different in different individuals. There is a statement that the Chinese—who seem to be credited with every new discovery—had used thumb impressions as proofs of identity for a long time, but Mr. Galton pronounced it to be an eggregious error. Impressions of the thumb formed, indeed, a kind of oath or signature among the Chinese, but nothing more. Sir W. J. Herschell, however, when in the Civil Service of India, introduced the practice of imprinting finger marks as a check on personation. Mr. Galton's impressions were taken from over 2,000 persons by spreading a thin film of printers' ink on a plate of glass, then pressing the thumb or finger carefully on the plate to ink the papillary ridges, and afterwards printing the latter on a sheet of white paper. Typical forms can be discerned and traced, of which the individual forms are mere varieties. Wide departures from the typical forms are very rare.

CONGRESS AND PURE FOOD.

AN UNTECHNICAL ANALYSIS OF THE PROPOSED PADDOCK BILL.

The bill known as the Paddock Pure Food bill, for preventing the adulteration and misbranding of food and drugs, is strenuously urged upon Congress by means of petitions, most of which are sent out from the petitions headquarters at Washington and returned there. There has been little discussion of this bill in the public press, and we doubt if many of the signers to the petitions in its favor, or if the Farmers' Alliance and other organizations of farmers that have approved it, know what its provisions are. It is called the Pure Food bill, and pure food is a good thing, and so the country is asked to believe that the Pure Food bill is a good thing. Mr. Paddock reported from the Senate Committee on Agriculture and Forestry on February 4, an amendment to the bill striking out all after the enacting clause and substituting the amendment. This amendment may therefore be treated as representing the ideas of the Committee on Agriculture and Forestry as to the proper measure of Government supervision of foods and drugs. It provides that the Secretary of Agriculture shall organize in the Department of Agriculture a section called the Food Section of the Chemical Division, and place it under the direction of the chief chemist, whose salary is to be increased by the sum of $1,500 a year. This officer shall from time to time procure and cause to be analyzed samples of food and drugs "sold or offered for sale in any State or Territory other than where manufactured." The Secretary of Agriculture is authorized to employ "such chemists, inspectors, clerks, laborers, and other employees as may be necessary to carry out the privisions" of the bill, and a long list of officeholders would certainly be required. The term "drug" as used in the bill, includes all medicines for internal or external use; and the term "food" includes "all articles used for food or drink by man, whether simple, mixed, or compound;" everything, in fact, from pemmican to gin fizz. The act defines at length what shall constitutes adulteration. A drug is considered adulterated:

"First, if when sold under or by a name recognized in the United States Pharmacopœia it differs from the standard of strength, quality, or purity, according to the tests laid down therein.

"Secondly, if when sold under or by a name not recognized in the United States Pharmacopœia, but which is found in some other pharmacopœia or other standard work on materia medica, it differs materially from the standard of strength, quality, or purity, according to the tests laid down in said work.

"Thirdly, if its strength or purity fall below the professed standard under which it is sold."

Under the first definition a druggist or drug manufacturer might be punished for selling a drug which was not only not adulterated, but was even of better quality than the standard. Everybody knows, on the other hand, that it is impossible to maintain exact perfection and purity in every specimen of every article in stock; and is it just to punish a man because a single article falls slightly below the professed standard of strength or purity, if it is still not injurious to health? If the Government has any call to take upon itself the supervision of drugs, adulteration injurious to the public health is the only kind of adulteration about which it can find any reasonable reason for concerning itself. All other adulteration is out of its province. Yet in the case of drugs, and, as will be seen, still more notably in the case of food, the so-called Pure Food bill proposes to interfere with private business for the sake of protecting purchasers against fraud. Here are the definitions of adulteration of food and drink:

"First, if any substance or substances has or have been knowingly mixed or packed with it so as to reduce or lower or injuriously affect its quality or strength, so that such product, when offered for sale, shall be calculated and shall tend to deceive.

"Secondly, if any inferior substance or substances has or have been substituted wholly or in part for the article, so that the product, when sold, shall tend to deceive the purchaser.

"Thirdly, if any valuable constituent of the article has been knowingly wholly or in part abstracted, so that the product, when sold, shall tend to deceive the purchaser.

"Fourthly, if it be an imitation of and sold under the specific name of another article.

"Fifthly, if it be mixed, colored, powdered or stained in a manner whereby damage is concealed, so that such product, when sold, shall tend to deceive.

"Sixthly, if it contain any added poisonous ingredient, or any ingredient which may render such article injurious to the health of the person consuming it.

"Seventhly, if it consists of the whole or any part of a diseased, filthy, decomposed or putrid animal or vegetable substance, or any portion of an animal unfit for food, whether manufactured or not, or if it is the product of a diseased animal, or of an animal that has died otherwise than by slaughter."

Of the seven, only a part of the first and the sixth and the seventh define such adulteration as it can possibly be the business of the Government to exercise its police power upon. Mere deceit is injurious to the morals of the deceiver, but it is the province of the Sunday-school, not of the United States Government, to discourage it. Deceit sounding in damages can be attended by the courts already. It is never desirable to create new offences unless it is absolutely necessary. The whole subject of the inspection and supervision of food and drugs can safely be left to the police power of the States. There is no necessity for calling in the power of the general Government over inter-State commerce; and as an attempt at Government regulation of the matter the so-called Pure Food bill is absurd. Now for the pains and penalties:

"The introduction into any State or Territory from any other State or Territory or foreign country of any article of food or drugs which is adulterated within the meaning of this act, is hereby prohibited; and any person who shall ship or deliver for shipment from any State or Territory or foreign country to any other State or Territory, or who shall receive in any State or Territory from any other State or Territory or foreign country, or who, having so received, shall deliver, for pay or otherwise, or offer to deliver to any other person any such article so adulterated within the meaning of this act, shall be guilty of a misdemeanor, and for such offence be fined not exceeding two hundred dollars for the first offence, and for each subsequent offence not exceeding three hundred dollars, or be imprisoned not exceeding one year, or both, in the discretion of the court."

Every person who manufactures, sells, or exposes for sale any drug or article of food included in the provisions of the act must furnish samples of them for analysis to any person duly authorized by the Food Section who may apply to him for that purpose. Each sample is to be divided into three parts, and each part sealed with the seal of the Food Section. One part is to be left with the manufacturer or dealer, one with the Food Section, and one deposited with the United States Attorney of the district. It will be seen that in case this provision should become law, a building of about the size of the Equitable Building in this town will have to be built in each of the big cities to furnish storage for the District Attorney's food and drug samples. The manufacturer or dealer may have his own sample analyzed at his own expense, and if his chemist's analysis differs from the Food Section chemist's analysis, a third chemist, appointed by the President of the Association of Official Agricultural Chemists of the United States, shall analyze the District Attorney's sample in the presence of the other two chemists, and the whole evidence shall be laid before the court. This will be very pleasant for analyzing chemists, and the account for their expenses will be a long one. The railroad fares alone will make a very pretty sum. Anybody who refuses to comply with these provisions for the analysis of samples "shall be guilty of a misdemeanor, and upon conviction shall be fined not exceeding $100 nor less than $10, or imprisoned not exceeding one hundred nor less than thirty days, or both." And anybody convicted of manufacturing, offering for sale, or selling an adulterated article of food or drug, in addition to the penalties already mentioned, shall have to pay all the necessary costs and expenses of inspecting and analyzing the adulterated articles. The makers of the bill seem to have admitted to themselves vaguely that it might be a little severe to fine and imprison dealers who may be entirely ignorant of the adulteration of their wares. How, indeed, is a small dealer to know whether the food products or drugs he has bought of larger dealers are pure or not unless he employs a chemist? And chemists are not common in the rural districts. The bill graciously provides that, "in prosecutions for violation of this act, proof of the act done shall be held to imply knowledge and intent on the part of the accused, *unless such knowledge and intent shall be disproved on the trial.*" That is, a man shall be presumed to be guilty unless he can show the contrary. Persons with old-fashioned notions of law will be inclined to object to this. The chief chemist shall publish in bulletins

the results of the analyses of specimens of food and drugs examined under the direction of the Secretary of Agriculture, "but the names of manufacturers or venders of such foods or drugs analyzed shall in no case be published in such bulletins until after conviction in the courts of violations of this act." The opportunity which this provision, and, indeed, the whole act, gives to malicious persons to injure the business of their enemies or rivals is obvious. No dealer or manufacturer of foods or drugs could feel himself safe from private malice or the extortions of the agents of the Department of Agriculture. Blackmailing would be inevitable, for the opportunities for it would be too great not to tempt cupidity. Spies would be the jackals of the blackmailers, and a monstrous, corrupt, and inefficient system would be foisted upon the people. Instead of protecting the health of its citizens, the Government would interfere, often wantonly, in their business, and the country would soon pray to be protected from its protectors. It would be impossible that such a law should not result in dishonesty, but the officious meddling would be even worse. The United States District Attorneys will have their hands full if the Food Section is established. It is their duty to begin proceedings upon report from the Secretary of Agriculture, or at least to satisfy themselves whether such proceedings can be maintained. A good working knowledge of analytic chemistry will have to be added to the necessary qualifications of these officials, and they will find that of all expert testimony that of analyzing chemists is not the least contradictory.

AFRICAN CURRENCY.

ALMOST EVERYTHING USED FOR MONEY IN THE DARK CONTINENT.

One of the greatest difficulties that the British and German colonization societies, as well as all travellers in Africa, have to contend with, says the Chicago *Herald*, is to be always provided with money for the transaction of business with the natives. The difficulty more especially referred to means the right kind of money. There is not one object on earth which would pass as a medium of exchange throughout the length and breadth of Africa; and, as in matters of money, the black skinned sons of Africa are just as particular as people of other climes, one of the first things necessary to make Africa a good field for civilization, and for mercantile enterprise, is to create and enforce a common monetary standard. One great obstacle is the fact that the population of Africa is split up into numberless tribes and tribelets, each one of which, in almost every instance, has a medium of exchange of its own, and recognizes no other in its dealings with strangers. And these mediums run up and down the scale in hundreds of gradations, beginning with the Austrian dollar, bearing the effigy and imprint of Maria Theresa, the empress, and ending with methodically flattened dogs. Of all coined money the Maria Theresa dollar has by far the largest circulation in Africa. Its territory extends from Fez in Morocco down to that "London of the Soudan," the great trade emporium, Kano, and thus comprises more than one-third of the whole of Africa, about 4,000,000 square miles, with a population of 70,000,000. But even in this coin there are differences. In Kassala, for instance, no Maria Theresa dollar is taken at its full value unless it bears the date 1780, the bust portrait of the empress, the crown adorned with seven well-defined apples, the decorations on her breast, and the letters S. F. near the rim. Of other metals which are used in coinage in civilized lands copper is used to quite an extent in Africa; the cannibalistic Niam-Niam especially, like the English bar copper of one inch diameter. Expeditions to the territory of the Niam-Niam, therefore, have generally been forced to include several coppersmiths, and these men, as soon as the Niam-Niam land was reached, industriously applied themselves to transforming the bars of copper into rings of sizes varying from that of a bracelet to that of a tiny finger-ring. And so great is the love of the Niam-Niam for these baubles that even one of the small copper finger-rings (value less than a cent) would purchase a fat chicken of them. Iron, too, is made use of in this way among the Africans. As it goes into trade in stick form, there were up to recently such expressions as "a stick of rum"—meaning the equivalent of a stick of iron in rum—generally about a gallon; "a stick of tobacco," equivalent to twenty rolls of the weed, quite common in central parts of Africa. At the mouth of the Niger, for instance, in Bomey, the iron is wrought into horseshoe-like form and then called igbi or manilla. Another form is given to this iron money in the territory watered by the tributaries of the White Nile. The Bongo people have an iron currency having the shape of a spade, with a handle and an anchor-like end to it. This they call loggo colluti. The largest iron coins circulating here are of the size and shape of a large plate, being one foot in diameter. These treasures are piled up in the warerooms of native merchants just as silver or gold bars in other lands. For ten iron plates of two pounds weight each the love-lorn Bongo swain buys his inamorata of her papa. When he can't get ten of such iron plates he has to be satisfied with an elderly beauty. Besides metals, salt is a medium of exchange in Africa. This is especially the case in Abyssinia and in certain districts in Northern Africa. The blocks of salt called amote come from the East of the Abyssinian Alps. They have the shape of a grindstone, with one end pointed, and weigh originally about one and a quarter pounds. A camel may carry 500, a mule 250, a donkey 200, and a slave 60 of these chunks. For a Maria Theresa dollar the Afar gives 100 of these pieces of salt, the people of Adoas only 40, those of Gaudar but 30. To prevent the amole from losing its weight by frequent handling it is put on the market in a wrapper of tree-bark. The Kissama people, or the Koanza in Angola, make use of their salt in a similar way, weaving rattan around it. There is also a kind of paper money in circulation in Africa. On the coast of Loango, for instance, they have um bougo, a sort of paper mat, one square foot large, of which one hundred are worth a piece of cloth in Kano. In the interior of the Soudan the tobe, a cotton cloth, and in Kanem a cotton shirt is the regular standard money. On the other hand, in Dikoa, in Ademouah, in Loggone, and elsewhere, small cotton strips are the regular currency. In Bagirari these strips are so small that from seventy to one hundred and fifty of them would have to be pieced together to make a shirt. In Darfoor the gray, coarse shirting circulates as money, and in Tiout, in upper Egypt, this material is dyed dark or blue and then cut into pieces of three yards in length. Glass beads are also much in vogue as money, but in them taste differs, and changes so continually among the different tribes that their value as a standard money is materially decreased. More than once has an African explorer suddenly found himself in a territory where the beads he had brought along would no longer pass muster with the native belles since they had recently taken a liking to another kind of bead; and the only way to make them take his beads in payment for provisions was by allowing a generous discount on their previously ascertained value. In the Southwestern districts of Africa large red beads, either of oval or of cylindrical form, are still the favorites, also small beads of indigo hue, small black ones, and others with red dots. An extensive field is covered by the kaori currency, those tiny shells of porcelain appearance and of lively hue which are found in enormous quantities in the Maldivian group of islands. The color is white and yellow or brown. This little shell measures from two-thirds to one and two-third inches in length, and is shipped either to London first or direct to Africa. A ton of these kaoris costs in Ceylon from $350 to $375. These little shells have been in African trade for many centuries. The Arab trader, Ibu Batuta, noticed them along the Niger in the fourteenth century. The first Portuguese mariners likewise passed them among the natives all along the coast of West Africa. Originally, probably, these kaori shells obtained their popularity in Africa because of their easy adaptation for purposes of personal decoration. Their value, however, has steadily depreciated.

HEADACHE.

HOW TO CURE IT WITH HOT WATER AND A SPONGE.

In case of the ordinary nervous headache from which women suffer so much, says an authority, remove the dress waist, knot the hair high up on the head, out of the way, and, while leaning over the basin, place a sponge soaked in hot water, as hot as can be borne, on the back of the neck. Repeat this many times, also applying the sponge behind the ears, and, if the assertion of the writer is not a mistaken one, in many cases the strained muscles and nerves that have caused so much misery will be felt to relax and smooth themselves out deliciously, and very frequently the pain promptly vanishes in consequence. Every woman knows the aching face and neck generally brought home from a hard day's shopping, or from a long round of calls and afternoon teas. She regards with intense dissatisfaction the heavy lines drawn around her eyes and mouth by the long strain on the facial muscles, and when she must carry that worn countenance to some dinner party or evening's amusement, it robs her of all the pleasure to be had in it. Cosmetics are not the cure, nor bromides, or the many nerve sedatives to be had at the drug shop. Here, again, the sponge and hot water is advised by the writer quoted, bathing the face in water as hot as can possibly be borne; apply the sponge over and over again to the temples, throat, and behind the ears, where most of the nerves and muscles of the head centre, and then bathe the face in water running cold from the faucet. Color and smoothness of outline come back to the face, an astonishing freshness and comfort is the result, and if a nap of ten minutes can follow every trace of fatigue will vanish.

COST OF HEATING WATER.—Water is one of the hardest of all substances to heat. This furnishes a good illustration of the law of the conservation and transformation of forces. To raise one pound of water one degree in a minute is required a heat which, if applied to an engine, would raise 772 pounds of water or any other substance one foot high. To raise eighty-six pounds one degree in a minute would be equivalent to raising eighty-six times 772 pounds to the height of one foot in a minute.—*Washington Post.*

WHAT HORSES DIE OF.—A New York horse life insurance company, insuring only sound and generally young animals, worth between $100 and $400 each, reports that, of 704 horses dying within the past five years, 183 died of colic, 77 of inflammation of the bowels, 74 of kidney trouble, 51 of pneumonia, 52 of sunstroke, 30 of pinkeye, 37 of lockjaw, 23 of broken legs, 12 of epizootic, 10 of heart disease, 4 of blind staggers, 9 killed by runaways, 4 were drowned, 2 were killed by lightning, 128 died of unknown diseases, and only 8 were burned.

HOME OF INFLUENZA.—Professor Tessier, of the medical faculty of Lyons, has returned from Russia, whither he was sent last March to take evidence upon the course of influenza there, and the various conditions of its evolution. He found, according to the *Medical Record*, that influenza is a growth of Russian soil, and, when not a raging malady, is a smouldering one. The way the people live in winter, locked up in heated houses; the flatness of the soil, its consequent bad drainage, and universally sodden condition when the April thaw begins; the filthiness of the farm yards, the village streets, and the rivers, which become suddenly swollen, and on falling leave a putrid mud behind—all conduce to make influenza endemic. Its microbe is, in fact, to be found in this mud. Dr. Tessier calls it a strepto bacillus. What is peculiar in this disease is the alliance with this bacillus of pneumococcus, which also lives in Russian marshes, river mud, and village pools.

OPALS.

THEIR PLENTIFUL OCCURRENCE IN THE STATE OF WASHINGTON.

A discovery of opals has recently been made near Moscow, in the State of Washington, close to the Idaho line. A number of the gems have been brought to this city and cut, showing a more brilliant play of colors than those obtained from Mexico. They are whiter and without the yellowish tinge of the Mexican gems. Some of them appear to be harlequin opals, on which the patches of color are made angular and variously tinted but evenly distributed. Others show deep green flashes of color, like those called lechosos by the Mexicans. One, a very large specimen, has been examined by a very skilful lapidary, and other competent parties, who are of opinion that it was the largest and most valuable precious opal in the rough that has been brought to this city. The recent find was made in a wheat-field where men were digging a well, and at a depth of four feet they came upon this deposit. Specimens have been shown to us by Melville Attwood, of this city. Specimens of basalt wacke, the enclosing rock or matrix of the opal, came with the gems. Mr. Attwood has prepared a section of the matrix for microscopic examination, by which he identified the substance. No special work has been done on the claim this winter, owing to the snow, so that the extent of the deposit is unknown. Some of the gems are quite large and pure ; and, in fact, all of them are of very good quality and quite handsome, excelling in beauty and lustre those from Mexico. Most of the opals come from Hungary, Honduras, Mexico, and Queensland. Those from Hungary are the finest and most valuable. The Honduras mines are little worked, and the opals seldom reach the market. The opals of Mexico are well known throughout the world, although they do not rank in value or durability with those from Hungary. It is not generally known that there are several places in the United States where opals have been found, most of them, however, small, colorless, and of little value as gems. Mr. G. F. Kunz, gem expert of Tiffany & Co., New York, in his recently published work on "Gems and Precious Stones," speaks of opal showing a brilliant play of rainbow colors, either of the noble or fine opal variety, having been observed in the United States only, near John Day River, Crook County, Oregon. The specimen found there is transparent, grayish-white in color, with red, green and yellow flames. The play of colors equals in beauty any Mexican material, and it is the first opal found in the United States that exhibits color. Mr. Kunz says that this strikingly resembles and has the absorptive properties of tabasheer, the variety of opal which is formed in the joints of bamboo, and which is used in India for medicinal purposes. "Undoubtedly," he says, "better material of the same kind exists where this is found." A beautiful fire opal without any opalescence occurs in a small vein about one-fourth inch thick and two inches square from Washington County, Ga. Common opal in small masses of greenish and yellowish white color, with vitreous lustre, are found at Cornwall, Pa., also at Aguas Calientes, Gibson Gulch, Idaho Springs, Colorado, of a brownish color. Professor William P. Blake, in his catalogue of California minerals (1866), wrote of a rich white variety of opal found at Mokelumne Hill, Calaveras County, Cal., and on Stockton Hill, Chile gulch, opals vere found in a thin stratum of red gravel at a depth of 345 feet. These stones were thought to have a market value, but really had none. A milky white variety similar to these and without fire is found thirty miles south of Mount Diablo, Contra Costa County, also in the foot-hills of the Sierra at the Four Creeks. Nothing, however, with the opalescent lustre and fire of these Washington opals has, as far as we are informed, been found before in the United States. As to the extent of the deposit, that is yet to be determined. Opal is a native amorphous hydrated silica, the same mineral as quartz with the addition of six or seven per cent. of water. It is never found in a crystallized form, occurring in masses having a conchoidal fracture. It has a vitreous lustre, sometimes inclining to resinous or pearly, and white, green, yellow-brown or gray color, according to the foreign substances present. Hardness 5.5–6.5 ; specific gravity, 1.9–2.3. The varieties of opal are distinguished according to their color and other physical properties. Precious or noble opal, like the Washington, is generally white or colorless, and exhibits a rich play of colors—green, red, blue and yellow, of various shades. When large, and exhibiting its iridescence in perfection, it is a very valuable gem. Fire opal is a transparent opal colored hyacinth, red to honey and wine yellow by ferric oxide ; occurs at Zimapan, in Mexico. The common opal is of various colors, but without iridescence. The formation of opals is due to the solubility of amorphous silica in water, especially in hot water, containing carbonic acid, the silica being dissolved out by spring waters from decomposed silicates and deposited under favorable circumstances in a state more or less approaching to purity.—*Min. and Sci. Press.*

PURITY AND IMPOSITION.

A SENSIBLE STATEMENT OF THE RIGHT OF CONGRESS TO INTERFERE WITH HONEST MANUFACTURES.

We receive almost every day, says the *Journal of Commerce*, from some indignant correspondent an appeal for our help in "putting a stop to these constant attacks in and out of Congress upon important home industries." Most of these communications are anonymous, but one just at hand, containing the quotation we have given above, was duly signed by a prominent capitalist. He confesses that he is interested in the manufacture of certain compounds against the sale of which so much legislation has been invited or directed, and he cannot see why the articles thus put upon the market are the object of such persistent hostility. They are innocuous, he claims, employ a large capital and an immense force of laborers, and meet a felt want in the community. He cannot see why the articles compounded with oleomargarine and cotton-seed oil should be singled out for hostile legislation. These are the product of vast industries, he asserts, and add hundreds of millions annually to the wealth of the country besides supplying remunerative employment to a large body of workmen who might otherwise be standing idle in the market-place with no one to hire them. Here are healthy articles, not imported, but produced or manufactured at home, and eminently adapted to popular use ; why should their manufacture or sale be hindered or hampered at every turn at the envious demand of other industries that are thrown into the shade by the prosperity of these newly discovered products? The tone of all these complaints is the same, and they are founded on a common error. It is not the manufacture or even the sale of the articles in question that engages the attention of the law-makers or those who demand such legislation. Every cotton seed extracted by the gin may be pressed in the mill, and the rich oleaginous stream be refined, treated with chemicals to take away its natural flavor and odor, and then be barrelled or bottled, labelled and sold to as many as care to indulge in that luxury. We never heard any one who objected to an industry thus conducted. In like manner the product of beef fat, or the fat of other animals, may be "plunged in a water bath" "melted by means of an artificial digestion," treated with two per cent. of "gastric juice made with half a stomach of a pig or sheep well washed," purified with "thirty grains of biphosphate of lime," then duly crystallized, and after much more manipulation of this sort, according to the Mege patent, may be sold as animal fat, or even as oleomargarine, by the gallon or pound. We never knew of any opposition to a labor or trade of that sort. But when cotton-seed oil, brought to the right color, is put into a bright glass bottle, duly sealed with perfumed wax, and this is half covered with an exquisitely wrought label setting forth in classic French that it is virgin salad-oil from the olive garden of Hopestein & Rufengalls, near Bordeaux, in France, and is warranted pure, and free from everything but the product of the olive fruit, we think the housekeeper who is deluded by these tokens into its purchase for consumption at his table has a right to be indignant. We collected numerous samples of "salad-oil" thus labelled and warranted pure, as the product of the olive, in sunny Italy or southern France, sold at the leading groceries in this city, and found that some of them had not a drop of olive-oil in them, and the best were adulterated from 40 to 60 per cent. with the oleaginous product of the cotton seed. In the same way when this oil is compounded with other substances and sold as "fine family lard," those who purchase it for home consumption, supposing it to be the unadulterated product of the hog, have a right to protest, and to say hard words concerning the deception. We do not wonder that they call upon the law to protect them from such an imposition. It makes no difference with our estimate of the matter that the article containing such a mixture is declared to be better for home use and more desirable for export than pure hog's lard. We believe in letting every tub stand upon its own bottom, and in calling things by their right names. A man has no business to put ground bark in with his pepper on the assumption that it is far healthier than that sharp spice for general consumption, even if he believes that to be true. The only honest way is to give the purchaser the option. The traveller was right when he asked his hostess at the inn to bring the hairs in on one plate and the butter on another, upon the ground that when he ate that compound he liked to do the mixing himself. To take oleomargarine made of the fat of animals, and churn it with cream or cow's milk to give it the flavor of genuine butter, and after duly coloring it to sell it as the product of the dairy, is a cheat, and everybody dealing in it must be aware of this fact. No one wants to stop the sale or use of oleomargarine if its consumption can be confined to those who know what they are eating ; but the producers know very well that not a thousand pounds of all the many tons that are sold are eaten by those who know the true character of the product. The first and even the second purchaser may know more or less of its constituent elements, but the lips that take it in would instantly reject it if they knew what was passing them. All the clamor about ruining a desirable industry, and placing the ban of the government on a healthful article of food, is a false pretence from beginning to end. We do not believe that Congress has any right to meddle with the subject, but we think every dealer who knowingly sells a pound of this mixture should be visited with a penalty. If he believes it to be a healthful and desirable article of food, and one the consumers are ready to purchase, let him call it by its true name and sell it for what it is, and see how many will buy it. And if the hotel-keeper or the boarding house proprietor who buys it with a knowledge of its true character believes that his guests and patrons would as lief have it as the product of the dairy, let him offer it to them by its true title and test their willingness to eat it. Split peas, duly roasted, may be healthier than the coffee bean, and ground chicory may be a capital addition to the steaming Rio or Mocha, but the only honest way is to sell the articles separate, and let the consumers mix them if they so desire. Or, if they must be ground together to produce the proper effect let the fact be stated on every package. No one wishes to denounce the business of roasting split peas, or of sweetening chicory with licorice and offering it in the market. Cotton-seed oil may be sold as such without offence to all who will buy it, and grease may be "digested" with pigs' stomachs, and offered by its real name as a substitute for butter. The fraud is in the disguise. And this is swindling of the basest kind, for it imposes on the victim's stomach, and thus tampers

with the essentials of his being. This is the age of adulterations, but there will be a reaction from it all some day, and the dealer who sells an article with a false label, or by a misrepresentation of its true character, will come to be regarded as a criminal for whom no punishment is too severe.

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

March.

MEAT.—Beef, mutton, ham, kidneys, liver, venison, sausage, veal.

GAME AND POULTRY.—Grouse, hare, pigeon, chicken, duck, turkey, goose, snipe.

FISH.—Bass, cod, eels, carp, catfish, flounders, halibut, herring, lobsters, mackerel, mussels, oysters, perch, pike, rock-fish, salmon, smelt, white-fish, trout.

VEGETABLES. — Artichokes, beans, carrots, celery, garlic, lettuce, onions, parsley, parsnips, potatoes, shallots, spinach, turnips, watercress.

FRUITS.—Apples, bananas, oranges.

PRACTICAL RECIPES.

EGG SOUP.—Boil four eggs for twenty minutes, let them cool, open them, and grate the yolks, and chop the whites. Put two tablespoonfuls of butter and two tablespoonfuls of flour in a saucepan, and stir over the fire until they are thoroughly incorporated; then add one quart each of hot water and milk. Season with pepper, salt and a little nutmeg; add the whites and serve.

FISH WITH CHEESE.—Cut up together a few mushrooms, some parsley and a small onion, and fry them in butter; season highly with salt and pepper. Butter a baking dish and put the fried vegetables on the bottom; then put in a layer of cold cooked flounder or any other fish with large flaky meat. Sprinkle bread crumbs on top, moisten with stock and bake. Serve slices of lemon with this dish.

LARDED LIVER.—Lard a calf's liver with slices of fat bacon. Prepare some vinegar as follows: Take sufficient vinegar to cover the meat, and add thereto a slice of onion, some sage, pepper and salt. Put the liver in this and let it lie for twenty-four hours; then take from the vinegar and roast it, with a little water in the pan. Baste often and serve with brown gravy.

FRIED ONIONS AND POTATOES.—Put two large tablespoonfuls of butter over the fire, and when very hot add two small sliced onions; sprinkle with salt and put a cover over them; when they have cooked ten minutes put in six good-sized potatoes that have been peeled and cut into dice. Stir all together, then add salt and pepper; cover the pan again and let them cook until brown on the bottom, shaking the pan occasionally, but not mixing the potatoes and onions.

CHOCOLATE CUP CUSTARD.—To a quart of milk add the beaten yolks of five or six eggs and two heaping tablespoonfuls of chocolate, vanilla, sugar to taste, and a very little salt. Melt the chocolate in a little hot milk before adding to the other ingredients. Fill cups with this, and set them in a pan of water to bake; they will need about fifteen minutes. Serve cold.

COCOANUT CAKES.—One cup powdered sugar, two cupfuls desiccated cocoanut, two tablespoonfuls flour, whites of two eggs. Mix well, roll into a sheet, cut into small cakes, and bake a light brown.

OYSTER ROLLS.—Boil two dozen oysters for a few moments in their own liquor, take from the fire, remove the tough part and mince the rest; strain the liquor, return it to the fire, and make it quite thick with flour and butter blended together; add to this two spoonfuls of cream and a dash of powdered mace. Now add the oysters and take from the fire. Roll out some paste very thin, cut it into little squares, put a spoonful of the oyster on each, fold up the corners, brush with the yolk of an egg, and bake.

WOMEN'S WORK.

THE RELATION OF HOUSEHOLD WORK TO HEALTH.

She was a woman of mild and inoffensive appearance. It did not seem possible that she could hurt a fly. For years she and her husband had labored to earn a home. Now it was half paid for. The faithful wife had risen early in the morning to get her "man's" breakfast; religiously washed, dressed and spanked the children. She had kept the house neat and tidy, and had sat up until late at night to repair many an unfortunate rent, and "piece out" many an unpiecable garment. Her life had seemed a hard, toilsome one, but the hope of a home free from debt spurred her on. At last the blow came! Her lord and master came home and announced that he had joined a strike, and would work no longer for a shop that did not employ "union" labor. Then it was that the little woman arose in her might. "John Henry," said she, "for seven years I have worked sixteen hours a day for board and lodging, with a new dress once a year. You have worked eight hours a day, and partly paid for our home, and had plenty of cigars and beer. You strike; I strike too. Either you go to work in the morning or I'll go home to my mother." John Henry was thunderstruck. A woman strike! Why, it's preposterous! But here was the cold fact; John Henry faced it, succumbed to fate, and went to work. But, my gentle reader, suppose the women were all to strike, what would become of us? We give it up. In order that, like the good Sunday-school books, our story may have a moral, I will say something about "women's work and women's health." It is a popular saying that a perfectly sound woman is a rarity. So it would seem. But, why is this so? In the first place, women dress unhealthfully. They constrict the waist too much. A perfectly healthy woman ought to breathe as deeply as a man. Can most women do it? We think not. They rest the weight of the clothes upon the hips; they wear thin shoes with paper soles, and often have cold feet, with a congestion of blood about the trunk. We like to see pretty feet; but we really wonder how many lives pretty feet cost in these United States! What of woman's household work? In the first place, it is monotonous work. No man would ever endure it. So little change of scene or faces, with day after day the same endless toil, with the same apparently barren results. Most women become invalids, not so much from overwork as from nerve tire. We hear a great deal about the poor workingman nowadays; but who thinks of the workingman's wife? Then, too, think of the farmer's wife, and, above all, of her environment. We once examined a poor woman for lunacy. As we entered the house, and found a miserable rag carpet upon the floor, and upon the dingy walls, besides the usual chromo of some cheerful death-bed scene, we noticed the picture of a cemetery, with an unhappy individual under a weeping willow, shedding tears over a dismal tombstone. Near this was framed a memorial, in a black border, of some dear departed. A framed marriage certificate made the collection very appropriate and complete. That woman's solitary diversion was saving pennies and attending the country prayer meeting. We dined with them. Our bill of fare consisted of some tough, stringy, boiled beef, some soggy boiled potatoes, a heavy dark material called bread, and some celluloid pie. With such surroundings—a bad family history—living on innutritious, ill-cooked food, could any woman help becoming insane? We think not. How shall we prevent the ill effects of women's work? 1. By intermittent periods of rest. Every woman should provide herself with a lounge, upon which she can throw herself at intervals during the day, and permit no amount of prospective work to interfere with her daily rest. 2. Women need exercise. Even after a hard day's work, let her take a long walk in the open air. Women need more variety in their work. The introduction of lawn tennis as a popular game will produce a generation of stronger women. For healthy women, horseback riding is unsurpassed as an exercise. Dancing, in moderation, is likewise excellent. Rowing is an admirable stimulant of the circulation, and, strange as it may seem, the homely art of sweeping is not to be despised. When you take a walk, have an object. Take up the long neglected study of botany, geology, or photography. Have some charitable work, and don't watch your little aches and pains. 3. Dress sensibly. Your husband will agree with me that you never look so sweet and lovable as when you wear your tea-gown. You don't need to appear slovenly. The most artistic dress is that which shows the true shape of the human form, without exaggeration or distortion, and is far more healthful.—*Health Record.*

INTERIOR OF THE EARTH.

WHAT IS TO HAPPEN AT SOME REMOTE FUTURE DATE.

One of the most interesting questions relating to the earth, considered as a planet, is that of its interior constitution. Observations made in deep mines and borings indicate that the temperature increases as we go downward at the average rate of 1 deg. Fahr. for every fifty-five feet of descent, so that if this rate of increase continued the temperature at the depth of a mile would be more than 100 deg. higher than at the surface, and, at the depth of forty miles, would be so high that everything, including the metals, would be in a fluid condition. This view of the condition of the earth's interior has been adopted by many, who hold that the crust of the earth on which we dwell is like a shell surrounding the molten interior. But calculations based upon the tidal effects that the attraction of the sun and moon would have upon a globe with a liquid interior have led Sir William Thomson and others to assert that such a condition is impossible, and that the interior of the earth must be solid and exceedingly rigid to its very centre. To the objections that the phenomena of volcanoes contradict the assumption of a solid interior, it is replied that unquestionably the heat is very great deep beneath the surface, and that reservoirs of molten rock exist under volcanic districts, but that taking the earth's interior as a whole the pressure is so great that the tendency to liquefaction caused by the heat is overbalanced thereby. The whole question, however, is yet an open one. According to the nebular hypothesis, which assumes that the bodies of the solar system once existed in a nebulous form, and by gradual condensation and loss of heat have attained their present condition, it is probable that the earth is still slowly cooling off, and that, as we see it, it represents an intermediate stage between the hot vaporous globe of a planet like Jupiter and the cold and barren moon. If we accept this theory—and it is yearly gaining strength—then the habitable period in the earth's career appears to be but one chapter in its varied history. When it was yet molten and vaporous it could not support life, but it shed light like a star. Now it possesses a cool and solid crust on which innumerable tribes and species of animal and vegetable life swarm and flourish. Anon it will become cold and inert, its waters and its atmosphere retreating into its interior, and with them the life that depends upon their presence will disappear. This possible cause of the cessation of the life-supporting energies of the earth, it will be observed, is independent of the withdrawal of the light and heat of the sun, an ultimate catastrophe to which we have heretofore referred.—*Prof. Garret P. Serviss, in the Chautauquan for February.*

Indigestion

Horsford's Acid Phosphate.

A preparation of phosphoric acid and the phosphates required for perfect digestion. It promotes digestion without injury, and thereby relieves those diseases arising from a disordered stomach.

Dr. E. J. WILLIAMSON, St. Louis, Mo., says: "Marked beneficial results in imperfect digestion."

Dr. W. W. SCOFIELD, Dalton, Mass., says: "It promotes digestion and overcomes acid stomach."

Dr. F. G. McGAVOCK, McGavock, Ark., says: "It acts beneficially in obstinate indigestion."

Descriptive pamphlet free.

RUMFORD CHEMICAL WORKS,

PROVIDENCE, R. I.

BEWARE OF SUBSTITUTES AND IMITATIONS.

Caution:—Be sure the word "Horsford's" is *printed* on the label. All others are spurious. Never sold in bulk.

ADVICE TO TRAVELLERS.

At this season of the year, when so many people are making preparations to leave home and seek amusement, study or health in other lands and climes, a few suggestions as to physical welfare may be of high value. In nearly every instance change of air and scenery increases the appetite and decreases the secretions. This is exceptionally true of ocean travel. The business man or woman of family who eats two moderate meals a day at home, takes five on a great steamer, and even then goes to bed feeling hungry. This physiologic phase of travel is of great benefit in nearly all cases. It makes the thin grow stout, the weak strong, the anæmic full-blooded, and the nervous and overworked calm and sound. But, on the other hand, what with the direction of all the bodily energies toward the assimilation of food, and the creation of new blood and of fresh tissues, there is a marked decrease in the action of the pores, kidneys, liver and bowels. The skin becomes clogged and discolored, the bladder acts irregularly, a bad taste appears in the mouth, and constipation, one of the greatest of physical evils, becomes the rule and not the exception. Unless care is taken by the traveller, bad results are bound to occur. It may take the form of some special disease, such as fever, dysentery or boils, or of a general trouble like malaria or nervous prostration. In either event harm is done, and frequently so much that the long-contemplated tour or trip becomes a positive detriment to the traveller. It is in this manner that many places have undeservedly gained the ill-repute of being unhealthful. It is a simple enough matter to prevent these ills; in fact, it is far easier to prevent than to cure. The first thing is to keep the pores open and the skin active. For this nothing can take the place of the warm bath. Cold bathing is good in its way, but it cannot do the good which warm does. The best is the Turkish, Russian or vapor bath. Next to these is the familiar bath-tub of home with the water at 90 deg. Fahr. If soap is used, employ a neutral toilet-soap, and never one of those alkaline horrors

CLEVELAND'S SUPERIOR Baking Powder.

The Official Reports of the

United States Government, 1889,
Canadian Government, 1889,
New Jersey Commission, 1889,
Ohio Food Commission, 1887,

prove that Cleveland's is

THE STRONGEST

of all the pure* cream of tartar baking powders.

*Ammonia or alum powders, whatever their strength, should be avoided as injurious.

25 CTS PISO'S CURE FOR CURES WHERE ALL ELSE FAILS. Best Cough Syrup. Tastes good. Use in time. Sold by druggists. CONSUMPTION 25 CTS.

SCOTT'S EMULSION

OF **PURE COD LIVER OIL** WITH

HYPOPHOSPHITES OF LIME AND SODA.

THE STANDARD EMULSION OF COD LIVER OIL THROUGHOUT THE WORLD.

A BEAUTIFUL CREAMY MIXTURE—ALMOST AS PALATABLE AS MILK.

Having much greater remedial power than the crude Cod Liver Oil, without any of its nauseating effects.

Its PALATABLENESS, EASE OF DIGESTION, and long tolerance by most sensitive stomachs as well as its reliable therapeutic effect, has given it special favor with the medical Profession, and receives their unqualified endorsement and support.

Possessing as it does the tonic and stimulating properties of the Hypophosphites in combination with the strengthening and fattening qualities of the Cod Liver Oil—gives it a remedial value in WASTING DISEASES, ANÆMIA or IMPOVERISHED BLOOD, EMACIATION and CONSUMPTION—unequalled by any single or combined remedy in existence. The rapidity with which delicate children fatten and grow strong on this palatable Emulsion, is very remarkable.

Samples will be sent free except express charges to any wishing to try this preparation. For sale by all druggists.

SCOTT & BOWNE, New York.

with which hotel keepers are wont to supply their guests. A good rubbing, not so much with a towel as with the hand, should never be neglected. For the internal organs, Ayer's Sarsaparilla should be taken regularly. Its tonic influence upon the liver and kidneys cannot be overestimated. By acting upon the former it purifies the blood, brightens the complexion, and keeps the mouth clean and sweet. By acting upon the latter it prevents colds and congestion, removes the unhealthful substances which are the result of careless eating or drinking, and stops those threatening brick-dust or cloudy deposits in the urine which are so often the harbingers of disease. For constipation use Ayer's Cathartic Pills. They are mild in character, and do not produce griping or pain. Avoid salts, powerful cathartics, and mercurial purges. These give temporary relief, but eventually produce a chronic constipation worse than that for whose cure they were originally employed. The best rule when travelling is to take Ayer's Sarsaparilla twice a day, and when the system is at all alkaline, to eat fruit at the meals. Ayer's Cathartic Pills should be employed about once a week under normal circumstances. In cases of long-seated constipation they should be taken more frequently. Each person in this respect must be a law unto himself. By keeping these suggestions in mind, and acting in accordance, any one can make a tour of the world without losing a minute from illness, and even without having felt that lassitude which is too often the precursor of more serious ailments.

THE WORLD'S RAILWAYS.—The United States has a mile of railway for each 400 of population and each 22 miles of area, while the balance of the world has a mile for each 7,500 of population and 227 miles of area.

SENSIBLE.—When you read that some woman managed a real estate or other business and looked after a home and seven children at the same time, personally performing all the duties in each place, don't believe it. There is some one else at one end of the line or the other.

POWER OF A TAPER.—It is said that a burning taper uncovered for a single instant, during which it does not lose power amounting to one-thousandth of a grain, would fill with light a sphere four miles in diameter so as to be visible from every part of the compass.

UNIMPORTANT, IF TRUE.—The Old Testament has 39 books, 929 chapters, 23,214 verses, 592,439 words, and 2,728,800 letters. The New Testament has 27 books, 260 chapters, 7,959 verses, 181,253 words, and 838,380 letters. The complete Bible has 66 books, 1,189 chapters, 31,173 verses, 773,693 words, and 3,567,180 letters.

BALLOON SCIENCE.—It has been proposed to make the upper half of war balloons of very thin steel and the lower portion of ordinary balloon material, the whole so constructed as to hold hydrogen instead of ordinary gas.

PAPER DOORS.—Doors made of paper are said to be an improvement over those made of wood. They are formed of two thick paper boards, stamped and moulded into panels, and glued together with glue and potash, and then rolled through heavy rollers. They are covered with a water-proof and fire-proof coating, painted and varnished.

STORAGE BATTERIES.—When electricity is employed to charge a storage battery, only that part which is transformed into chemical energy is used. The rest is dissipated. The battery, then, instead of being a place where electricity is laid away, is a place where chemicals are left by the current with the expectation that they will in turn produce a current when called upon.

SCIENTIFIC SWINDLERS.—A short time since Council Bluffs was beautifully worked by two primary-storage-$10-light-of-the-world-battery fakirs. Some prominent business men got stock and stuck, and the fakirs got $500 and arrested. Westward the course of battery fiends takes its way, and some day they will strike the coast and get dumped overboard into the Pacific.—*Electrical Review.*

SOAPSTONE FOR BUILDINGS.—In China soapstone is largely used in preserving structures built of sandstone and other stones liable to crumble from the effect of the atmosphere; and the covering with powdered soapstone in the form of paint on some of the obelisks in that country, composed of stone liable to atmospheric deterioration, has been the means of preserving them intact for hundreds of years.

BLACK POLISH ON BRASS.—To make a dead-black polish on brass, for microscopes, etc., mix one ounce of nitrate of silver in a dish with 20 ounces of distilled water. In another dish mix one ounce of nitrate of copper with twenty ounces of distilled water. Mix the two solutions together, dip the brass in the liquid, remove the brass, and heat in an oven until the desired degree of black is obtained.

AUSTRALIAN MICA.—Deposits of mica have been discovered in the northern part of South Australia, and a shipment of about one ton has been made to Port Adelaide. The sizes are extraordinary, running up to 24 inches by 12 inches, and averaging 12 inches by 9 inches. One piece was 32 inches by 10 inches, but had to be cut into two pieces. The value of mica sheets of this size in London is about 15s. per pound.

EXCEEDINGLY FINE.—The body of every spider contains 4 little masses pierced with a multitude of holes, imperceptible to the naked eye, each hole permitting the passage of a single thread; all the threads, to the number of 1,000 to each mass, join together when they come out and make the single thread with which the spider spins its web, so that what we call a spider's thread consists of more than 4,000 threads united.

IS THIS TRUE.—*Good Health* has made an analysis of a cigarette. The tobacco was found to be strongly impregnated with opium, while the wrapper, which was warranted to be rice-paper, was proved to be the most ordinary quality of paper whitened with arsenic. The two poisons combined were present in sufficient quantities to create in the smoker a habit of using opium without his being aware of it, his craving for which can only be satisfied by an incessant consumption of cigarettes.

CRUSHED STEEL.—Crushed steel is said to be coming into use for cutting stone. It is made by quenching very high carbon steel in cold water from an excessively high temperature, such as would overheat steel for most purposes. This renders it not only hard, but rather brittle, so that it is possible to pulverize it. It is crushed in a stamp mill, and sifted closely to size. It is said to be not only cheaper, but much more effective than emery, giving a better polish and quicker, and lasting much longer.

SNOW DESTROYER.—Edison says that by next winter he will have perfected an electric reflector which will melt snow as it falls. As he resides in the heart of the great American blizzard belt and has been snowed under a good part of the winter, it is not surprising that his inventive mind has been turned in this direction. A snow destroyer will meet a want that is severely felt every winter by both New Jersey and New York, and among the inhabitants of those States his reflector will do more for his fame than all his other great inventions together.

FINGERS AND FORKS.—The proverb, "Fingers were made before forks," whose origin is inquired for by a correspondent, is of very ancient date. Forks were used for some purposes in the early centuries, and as far back as the twelfth century were made at first to hold fruit while it was sliced, and to help the dishes at the table. About 1300 they were used in Italy to convey food to the mouth, but not until 1530 was this fashion adopted in England. Even knives were not, as a rule, served to guests on common occasions, and every person was expected to furnish his own. Up to four centuries ago, in ordinary fare, each person at table used his own knife (brought or carried in his pocket) for cutting his food, and conveyed it to his mouth with his fingers. When forks were sometimes used by the gentry in England, say as late as 1650, it was still far more common to use the fingers, and if any one brought a fork with him to the table and made a little display with its use, it was quite usual for the remainder of the company to employ the bare hand, with the remark, "Fingers were made before forks."



A HIGH-GRADE PIANO
AT A VERY MODERATE PRICE.
NEW DESIGNS. FANCY WOODS.
Terms Easy. + Monthly Instalments.
TWO, THREE AND FOUR PEDALS.
Catalogues, Prices, Terms, Etc., sent to any address.
EVERY PIANO WARRANTED 5 YEARS.
(Mention this Paper.)

Fine Table Wines
From our Celebrated Orleans Vineyard.
Arpad Haraszthy & Co.
Producers of the
ECLIPSE
CHAMPAGNE,
530 Washington St.
SAN FRANCISCO.
GENERAL AGENCIES:
NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOSEPH R. PEEBLES' SONS CO., 73 West Fourth Street.
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.

THE ORIGINAL AND GENUINE
(WORCESTERSHIRE SAUCE).
LEA & PERRINS' SAUCE
In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—
Lea & Perrins
Beware of Imitations; see that you get Lea & Perrins'
For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.
JOHN DUNCAN'S SONS, NEW YORK

THE N. Y. HAY EXCHANGE BULLETIN.

OFFICIAL REPORT OF THE HAY AND STRAW MARKET AT NEW YORK.

COMMISSION SALESMEN.

NOTICE.

These names are arranged alphabetically.

WM. AFFLECK & CO.,
Commission Merchants in
HAY AND STRAW,
Office No. 5,
N. Y. Hay Exchange Building.

J. ALSDORF,
Commission Dealer in
HAY AND STRAW,
33d Street and 11th Ave.,
NEW YORK.

E. A. DECKER. F. W. TOMPKINS.
DECKER & TOMPKINS,
Commission Merchants in
HAY, STRAW, GRAIN,
Office: 16 New York Hay Exchange Building.

L. S. DILLENBACK. T. O. PECK.
DILLENBACK & PECK,
MAIN OFFICE:
Room 8, N. Y. HAY EXCHANGE, N. Y. City.
STOREHOUSE AND BRANCH OFFICE:
101, 103 and 105 North 5th St.,
and 152 and 154 Berry St.,
Palmer's Dock. Brooklyn, E. D.

EDWIN B. DUSENBERRY,
COMMISSION MERCHANT,
And Wholesale Dealer in
HAY, STRAW AND GRAIN.
No. 1, N. Y. Hay Exchange, New York.

THOS. FONDA & CO.,
Commission Merchants
And Dealers in Hay, Straw, Grain and Country Produce,
13 & 14 N. Y. Hay Exchange Building.

N. A. FULLER,
COMMISSION MERCHANT IN
HAY AND STRAW,
33d Street and 11th Ave.,
NEW YORK.

THEO. P. HUFFMAN & CO.,
COMMISSION MERCHANTS
In Hay, Straw, Grain, Feed, &c.,
648 & 650 West 34th Street,
Bet. 11th & 12th Aves., N. Y.

H. B. Jenkins. F. S. Williams.
JENKINS & WILLIAMS.
COMMISSION MERCHANTS IN
HAY, STRAW AND GRAIN,
HAY EXCHANGE.

The N. Y. Hay Exchange is located at 601 W. 33d St., corner 11th Avenue.

Only the cards of members of the N. Y. Hay Exchange appear on this page.

RULES FOR GRADING HAY AND STRAW

As Adopted by the N. Y. Hay Exchange.

CHOICE OR PRIME HAY—Shall be pure timothy, properly cured, bright, natural color, sound and well baled. No. 1—Shall be timothy, not more than one-eighth (⅛) mixed with "red top" properly cured, bright natural color, sound and well baled. No. 2—Shall be timothy, not more than one-quarter (¼) mixed with red top and blue grass, properly cured, good color, sound and well baled. No. 3—Shall include all timothy not good enough for No. 2, proportionately mixed with blue grass, red top, and clover, sound and well baled. SHIPPING—Shall include all hay not good enough for other grades, and may be natural meadow, free from wild or bog grass, and must not contain over one-third (⅓) clover, sound and well baled. CLOVER MIXED—Shall include all hay containing not over two-third (⅔) clover, and one-third (⅓) timothy, properly cured, sound, and well baled. CLOVER—Shall be medium grown, properly cured, good color, sound, and well baled. NO GRADE OR REJECTED HAY—Shall include all hay badly cured, musty, stained, or in any way unsound.

No. 1. RYE STRAW—Shall be clean, bright, long Rye, in bundles, sound, well and securely baled. No. 2—Shall be long Rye, in bundles, sound, well and securely baled. SHORT RYE—Shall be clean, not bundled, sound, well and securely baled. OAT STRAW—Shall be clean, bright, sound, well and securely baled.

In the New York market bale-wood is weighed in without tare. In all other markets it is deducted.

These quotations for choice, No. 1 and No. 2 hay are for large bales. 5c. per cwt. less when in perpetual press bales.

The New York quotations are per cwt. At other points, per ton.

NEW YORK, March 2, 1891.

The following are the market prices to-day at New York.

	Large Bales.	Small Bales.
Fancy Hay	60c @ 65c	55c @ 60c
No. 1	55 @	50 @
No. 2	50 @	45 @
No. 3 and Shipping	40 @ 45	40 @ 45
Clover Mixed	45 @ 50	45 @ 50
Clover	40 @	40 @
Long Rye Straw	80 @ 85	— @
No. 2 "	60 @	
Oat Straw	45 @ 50	
Wheat Straw	40 @ 45	

Receipts week ending Feb. 28, as follows:

Via N. Y. Central	128 cars.
" West Shore	100 "
Other roads by Lighter, 34th Street	55 "
Total	283 cars.

There has been considerable falling off in the receipts, owing to the inability of the railroads to move goods in consequence of the floods along the various lines.

Stocks show some decrease and prices have advanced a trifle on the better grades, but are unchanged on the poorer qualities. This morning arrivals are heavy, being Hay that has accumulated along the road for the last few days.

Rye straw continues in large supply, and there is no improvement in prices.

OSCAR KENT,
Commission Merchant,
HAY AND STRAW,
Room 20, New York Hay Exchange Building.
Personal attention guaranteed all consignments

JOHN KERWIN & SON,
DIRECT RECEIVERS OF
HAY, GRAIN and GENERAL PRODUCE
DEPOT AND STOREHOUSES,
Palmer's Dock, Nos. 97 & 99 North Fifth Street,
BROOKLYN, N. Y.
SHIPPING ADDRESS, PALMER'S DOCK, BROOKLYN, N.Y
West Shore R. R., N. Y. C. & H. R. R. R., N. Y. L. E. & W. R. R., Pennsylvania R. R., D. L. & W. R. R., Lehigh Valley R. R., and connections.

W. J. OVEROCKER. PERRY HATCH.
OVEROCKER & HATCH,
Commission Merchants in
HAY, STRAW AND GRAIN,
33d Street & 11th Avenue, New York.
References: West Side Bank, New York City; Exchange Bank, Holly, N. Y.

Gilbert Plowman, NEW YORK. Spencer Billington, FORT HUNTER, N. Y.
PLOWMAN & BILLINGTON
COMMISSION MERCHANTS,
HAY, STRAW, GRAIN, &c.
No. 15 N. Y. Hay Exchange,
33d St. & 11th Ave., NEW YORK.

JAMES ROZELL & SON,
Commission Merchants and Wholesale Dealers in
HAY, STRAW, GRAIN AND COUNTRY PRODUCE.
N. Y. Hay Exchange, New York.

SKINNER, BLOOM & CO.,
Successors to Rogers, Skinner & Co.,
COMMISSION MERCHANTS
And Dealers in
Grain, Flour, Hay, Feed, Meal, &c.,
74 CORTLANDT STREET, - NEW YORK.
Barge GYPSIE, Foot Bridge St., Brooklyn.

H. SLINGERLAND,
Barges MERCHANT and HARVEST QUEEN
Foot of West 11th Street,
HAY AND STRAW.
Also, 33d and 35th Streets, and all Railroad terminals. Special facilities for lighterage free goods.

CHARLES F. SWAN,
Commission Merchant in
HAY, STRAW & GRAIN,
At all the Railroad Terminals in New York, Brooklyn, Jersey City, &c.
MAIN OFFICE,
108 BROAD ST., NEW YORK.

TITUS, WELLS & WILLETS,
Commission Merchants and Dealers in
HAY AND STRAW,
133 Roosevelt St.,
NEW YORK.

G. E. Van Vorst. James M. Hillery.
VAN VORST & CO.,
COMMISSION MERCHANTS,
HAY, STRAW AND GRAIN
N. Y. Hay Exchange, 33d St., & 11th Ave.
562 & 564 West 34th St., NEW YORK.

NOTICE.

These names are arranged alphabetically.

HOSMER, CRAMPTON & HAMMOND,

NO. 43 COMMERCIAL STREET,

BOSTON.

COMMISSION MERCHANTS,

HAY, STRAW, FLOUR & GRAIN.

E. B. HOSMER, G. W. CRAMPTON, BENJAMIN HAMMOND, A. L. ROBINSON.

BOSTON HAY AND STRAW MARKET.

Hay, choice to fancy in large bales	$13.00 to $14.00
Hay, choice to fancy, perpetual pressed bales	12.00 to 13.00
Hay, fair to good	11.00 to 12.00
Hay, poor to ordinary	8.00 to 10.00
Hay, Clover and Clover mixed	8.00 to 10.00
Hay, swale	8.00 to 9.00
Straw, Rye, good to prime	17.00 to 17.50
Straw, Oat	9.00 to

BOSTON, March. 2d, 1891.

The receipts for the week are 238 cars of Hay and 42 cars of Straw. Corresponding week last year, 302 cars of Hay and 21 cars of straw. The receipts of Hay are lighter than for a long time, but there are still large amounts of Hay here on tracks and in the depots of the various railroads unsold. Market is still in buyer's favor; there being no improvement to note either in demand or prices. Quotations are nominal. Receipts of straw are in excess of demand; market is weak.

H. F. WILSON,
WIRE BALE TIES,
458 WEST 38th STREET, New York.

THURSTON'S IVORY PEARL TOOTH POWDER
WILL KEEP THE TEETH IN PERFECT CONDITION AND THE GUMS HEALTHY.
Price 25 & 50 Cents PER BOTTLE.

HAMMOND'S
CELEBRATED
Calumet Oleomargarine

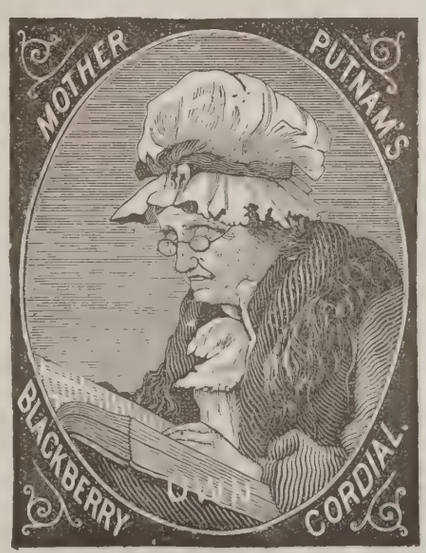
Strictly pure, cheap and healthful.
Ask your grocer for it.
Put up in packages of all sizes, also prints and rolls.

C. H. HAMMOND CO.,
607 to 615 THE ROOKERY,
CHICAGO.

Also offices at Boston, South Omaha, Neb., and Hammond, Ind.

Subscription $1.00 per year. Now is the time to subscribe.

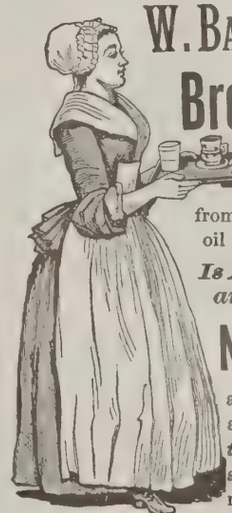
NATURAL MINERAL PURGATIVE WATER.
From the Springs of
VILLACABRAS.
Prescribed by the Highest Medical Authorities.
Stronger effects than any other under smaller volume. No smell—no repulsive taste—no after-constipation—no gripes. As a daily laxative it can be taken either pure or mixed with milk, tea or broth.
Sold by all Good Druggists.



C-U-R-E-S
DIARRHŒA, DYSENTERY,
MALARIA,
all ailments of the bowels. Is an anti-dyspeptic, and a DELICIOUS INVIGORATIVE. Leading Physicians prescribe it for ADULTS AND CHILDREN. *FOR SALE* by Druggists and dealers.
RHEINSTROM BROS., DISTILLERS OF FINE LIQUEURS,
54, 56, 58, 60, 62 E. 3rd STREET, CINCINNATI, O.

HARTSHORN'S SELF-ACTING SHADE ROLLERS
NOTICE SCRIPT NAME OF Stewart Hartshorn ON LABEL, AND GET THE GENUINE
HARTSHORN

GOLD MEDAL, PARIS, 1878.
W. BAKER & CO.'S
Breakfast Cocoa



from which the excess of oil has been removed,
Is Absolutely Pure and it is Soluble.
No Chemicals
are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.
Sold by Grocers everywhere.
W. BAKER & CO., DORCHESTER, MASS.

THE GREAT AMERICAN TEA COMPANY

LADIES

GET UP ORDERS.
Entire New Departure.
A HANDSOME PRESENT TO EVERY SUBSCRIBER.

THE GREATEST INDUCEMENTS
EVER KNOWN TO INTRODUCE OUR NEW GOODS.

If you enjoy a cup of **Delicious Tea** send in your orders. 3½ lbs. Fine Tea by mail on receipt of $2 and this "ad". Beautiful premiums given away with $5 orders and upwards. The **most extraordinary bargains** ever offered, during the next thirty days. China Tea Sets and Lamps with $10, $15 and $20 orders to introduce our excellent **New Crop Teas.** Formosa and Amoy, Oolong, Congou, English Breakfast, Japan, Imperial, Young Hyson, Gunpowder, Sun Sun Chop and Mixed. Good mixed teas 20c. per lb. Headquarters in United States for Fine Teas. One pound of our tea will go farther than three pounds of trash. Thirty years' national reputation for selling **Pure Goods Only.**

THE GREAT AMERICAN TEA COMPANY,
P. O. BOX 289. 31 and 33 Vesey Street, New York.

PUBLICATIONS OF THE

ANALYST PUBLISHING CO.

THE AMERICAN ANALYST.
Weekly. Every Thursday. $1 per year.

THE ROOFER, TINNER AND SHEET-IRON WORKER.
Monthly. 15th each month, $1 per year.

THE LEATHER MANUFACTURER.
Monthly. 1st each month. $3 per year.

Reliable agents and representatives wanted everywhere on liberal terms. Address

ANALYST PUBLISHING CO.
19 PARK PLACE, NEW YORK.



THE CENTURY DICTIONARY comes nearer to being a complete catalogue of the English language than any dictionary ever published. But it is not merely a dictionary: it is an encyclopedia of common things as well. It has been ten years in preparation. The leading scholars of the country have contributed to its pages. It is the latest dictionary and it ought to be, and is, the best.

A large descriptive pamphlet containing full-size sample pages, etc., will be mailed to any one sending five 2-cent stamps to
THE CENTURY CO., 33 East 17th St., New York.

"BILLET"

are

Carefully Selected French Sardines,

Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,
HOWARD STREET, BOSTON, MASS.

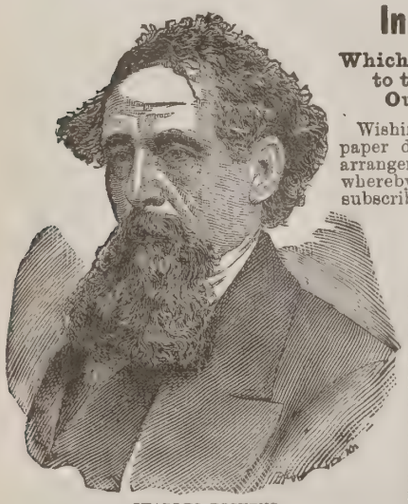
GRAND PREMIUM OFFER!

A SET OF THE

WORKS OF CHARLES DICKENS,

In Twelve Large Volumes,

Which we Offer with a Year's Subscription to this Paper for a Trifle More than Our Regular Subscription Price.



CHARLES DICKENS.

Wishing to largely increase the circulation of this paper during the next six months, we have made arrangements with a New York publishing house whereby we are enabled to offer as a premium to our subscribers a **Set of the Works of Charles Dickens, in Twelve Large and Handsome Volumes,** with a year's subscription to this paper, for a trifle more than our regular subscription price. Our great offer to subscribers eclipses any ever heretofore made. Charles Dickens was the greatest novelist who ever lived. No author before or since his time has won the fame that he achieved, and his works are even more popular to-day than during his lifetime. They abound in wit, humor, pathos, masterly delineation of character, vivid descriptions of places and incidents, thrilling and skillfully wrought plots. Each book is intensely interesting. No home should be without a set of these great and remarkable works. Not to have read them is to be far behind the age in which we live. The set of Dickens' works which we offer as a premium to our subscribers is handsomely printed from entirely new plates, with new type. The twelve volumes contain the following world-famous works, each one of which is published *complete, unchanged, and absolutely unabridged:*

DAVID COPPERFIELD,
MARTIN CHUZZLEWIT,
NICHOLAS NICKELBY,
DOMBEY AND SON,
BLEAK HOUSE,
LITTLE DORRIT,
OUR MUTUAL FRIEND,
PICKWICK PAPERS,
BARNABY RUDGE AND CHRISTMAS STORIES,
OLIVER TWIST AND GREAT EXPECTATIONS,
THE OLD CURIOSITY SHOP AND THE UNCOMMERCIAL TRAVELER,
A TALE OF TWO CITIES, HARD TIMES AND THE MYSTERY OF EDWIN DROOD.

The above are without question the most famous novels that were ever written. For a quarter of a century they have been celebrated in every nook and corner of the civilized world. Yet there are thousands of homes in America not yet supplied with a set of Dickens, the usual high cost of the books preventing people in moderate circumstances from enjoying this luxury. But now, owing to the use of modern improved printing, folding and stitching machinery, the extremely low price of white paper, and the great competition in the book trade, we are enabled to offer to our subscribers and readers a set of Dickens' works at a price which all can afford to pay. Every home in the land may now be supplied with a set of the great author's works.

OUR GREAT OFFER

TO SUBSCRIBERS

TO THE

AMERICAN ANALYST.

We will send the **ENTIRE SET OF DICKENS WORKS,** *in* **TWELVE VOLUMES,** *as here described, all postage prepaid by ourselves, also* **THE AMERICAN ANALYST** *for* **ONE YEAR,** *upon receipt of* **$1.50,** *which is only* **50** *cents more than the regular subscription price of this paper.* Our readers, therefore, practically get a set of Dickens' works in twelve volumes for only **50** cents. This is the grandest premium ever offered. Up to this time a set of Dickens' works has usually been $10.00 or more. Tell all your friends that they can get a set of Dickens' works in twelve volumes, with a year's subscription to **THE AMERICAN ANALYST** for only **$1.50.** Subscribe now and get this great premium. If your subscription has not yet expired, it will make no difference, for it will be extended one year from date of expiration. We will also give a set of Dickens', as above, free and post-paid, to any one sending us a club of three yearly subscribers.

ADDRESS:

THE ANALYST PUBLISHING CO.
No. 19 PARK PLACE,
NEW YORK.

Tabasco Pepper Sauce

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced, by connoisseurs, to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY,
NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

Don't kick



because your business is bad, but advertise If you don't know how to, write to us and we will tell you.

We will prepare your advertisement or give you advice and assistance to aid you in preparing it yourself. We will have the advertisement set in type and procure illustrations if any are needed. When a satisfactory advertisement has been produced we will furnish proofs and an electrotyped pattern to be used in duplicating the advertisement if the display or illustration make an electrotype desirable.

Address GEO. P. ROWELL & CO.,
Newspaper Advertising Bureau,
10 Spruce St., N. Y.

NATRONA BI-CARBONATE OF SODA.

(ABSOLUTELY PURE.)

The nature of the raw material from which NATRONA BI-CARBONATE OF SODA is made—viz., kryolith, a mineral containing *pure sodium*—insures a purity and uniformity of product which cannot be obtained from any other known material. In making BI-CARB. SODA from any other raw material, the use of sulphuric acid is a necessity, but none is used in any part of the process of making NATRONA BI-CARB.; hence its entire freedom from the slightest trace of arsenic, which is always present in ordinary soda. Its absolute purity and entire freedom from all traces of *sulphate of soda*, common salt and other impurities, render NATRONA BI-CARB. NEARLY TASTELESS, and being bolted through the finest bolting-cloth, insures the finest stage of division.

To these indisputable facts the attention of CONSUMERS of soda is specially called. They are IMPORTANT, and should influence both those who use and those who sell soda, to buy and sell NONE BUT THE BEST.

The NATRONA BI-CARB. Soda is kept in stock by almost every wholesale druggist and grocer throughout the United States, of whom it may be ordered.

Natrona Bi-Carb. Soda is unequaled by any other brand of English or American Manufacture.

PENNA. SALT MANUFACTURING CO.,
NATRONA CHEMICAL WORKS. PHILADELPHIA, PA.

ESTABLISHED IN LONDON, 1831.

DEAN'S PATENT Ardenter Mustard



W. G. DEAN & SON.
361 & 363 WASHINGTON STREET; 84, 86, & 88 NORTH MOORE STREET, N.Y.

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY
ACKER, MERRALL & CONDIT, and PARK & TILFORD.

RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,
184 Greenwich St., N. Y.

DR. PRICE'S CREAM Baking Powder.

Most Perfect Made

A Pure Cream of Tartar Powder—
Superior to every other known.
Used in Millions of Homes—40 Years the Standard.
Delicious Cake and Pastry, Light Flaky Biscuit, Griddle Cakes
Palatable and Wholesome.
No other baking powder does such work.

Vigoral

FOR

STRENGTH, NOURISHMENT AND REFRESHMENT.

PREPARED BY

ARMOUR & CO.,

CHICAGO,

From their celebrated EXTRACT OF BEEF, further strengthened in muscle-forming constituents by the addition of pure beef in powdered form.

Vigoral is seasoned ready for use and makes a delicious hot drink for cold weather.

SWIFT'S

CHOICE

Chicago Dressed Beef

AND

MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,

UNION STOCK YARDS,

CHICAGO, ILLS.

We shall be glad to supply our readers with any periodical published at club rates.

Send us a postal naming periodical and we will quote you prices.

ANALYST PUBLISHING CO.,
19 Park Place, New York.

GLENN'S SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,

C. N. CRITTENTON,

115 FULTON STREET,
NEW YORK.

Be progressive and keep abreast of the times. Avoid dyspepsia by using **Lard Compound** and **Cottolene,** a substitute for lard.

The highest medical authorities pronounce them healthful; and expert cooks commend them.

Our **Clairette** brand of cotton oil soap is the purest and best laundry soap in the market; as pleasant to the hands as genuine castile.

N. K. FAIRBANK & CO.,
CHICAGO AND ST. LOUIS.

The Standard of Excellence.

KINGSFORD'S

OSWEGO

Pure and Silver Gloss



STARCH

KINGSFORD'S
OSWEGO CORN STARCH
FOR
Puddings, Custards, Blanc-Mange, Etc.
THE PERFECTION OF QUALITY.
WILL PLEASE YOU EVERY TIME.
Always ask your Grocer for these goods.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 11. NEW YORK, THURSDAY, MARCH 12, 1891. WHOLE No. 211

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - $1 per year.
Single Copies, - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.

Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.

Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,

H. LASSING, M. D., } *Editors.*
T. P. McELRATH, }

No. 19 Park Place, . . . New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

American Contrasts 122
Aphasia 124
Domestic Dietetics 124
Editorials 121
City Government; Another Arctic Expedition: Our Production of Precious Metals.
Electric Service 123
Food Adulterations 125
Hay Market Official Bulletin 128

CITY GOVERNMENT.

Some very useful points in relation to the government of American cities, and consequently of value to every American citizen, were suggested in a recent lecture by the eminent economist, George Gunton, President of the N. Y. Institute of Social Economics. Among other things, the speaker emphasized the fact that cities are not only centres of population, but they are also the centres of manufactures, trade, hygiene, improvement, and social development. Men must accept them, not as necessary evils, but as necessary to progress. The census showed that the large cities were growing much faster than the smaller ones, and the time was coming when cities would govern State and Nation. Both had practically been governed by the farmer vote, but that was practically gone, which was not a matter to be regretted, for with the advance of time the farmer's vote could not be expected to be the most intelligent. Hitherto attempts to deal with cities had begun by decrying their officials, and that last year the citizens' movement was founded on the demand that the City Government should be conducted on a business basis. This meant that the power should be placed in responsible persons. That was what the city had been trying to do for twenty years, he said. There was once a movement to place the power in the hands of property owners, but it was defeated because it tended towards despotism and aristocracy. Later the power of the Aldermen was restricted, and the absolute power of making appointments was intrusted to the Mayor. The result was that Tammany Hall, whose power it was sought to crush, concentrated its strength upon the election of the Mayor, traded votes for him, elected him, and captured the appointing power. Tammany won because all that side of the city that was cut off and neglected was under its control. The remedy was with the people, and if they wanted better officials they must first get better voters. It was impossible to eliminate politics from city government in this country, and it was not eliminated in English cities. Politicians here were not much more corrupt than they were in England, where votes were bought up even by the Liberal Party at the rate of half a crown for a man and 18d. for a woman, for women there voted in municipal elections. It was true that English cities were better kept, but they were old, and had been improved by the aristocracy, who took a pride in their cities. Our cities were new, and were occupied by a heterogeneous population. But great progress has been made even here.

ANOTHER ARCTIC EXPEDITION.

An officer of the American Navy is about to undertake a new expedition into the still unknown regions about the North Pole. His name is R. E. Peary, and he holds the position in the service of civil engineer, with the rank of lieutenant. The Government, however, does not back the expedition, but the expenses will be defrayed by geographical and scientific societies which have been interested in Engineer Peary's scheme. That officer has asked the Navy Department for leave of a year and a half, and in his letter of application sets forth at length his plan for the expedition. He does not go so far as to assert his ability to reach the North Pole, but believes that he can reach a point farther north than that attained by Lockwood, of the Greely expedition. Lockwood journeyed by the Greenland coast, and went as far north as 83 degrees and 22 minutes before turning back. Mr. Peary, who is an enthusiast on this subject, proposes to go through Greenland. The party will leave here next May, going to Whale Sound on the western coast of Greenland. For this purpose a whaler will be used. From Whale Sound the party will strike out in a northwesterly direction across Greenland, utilizing sledges in travel and transportation. Mr. Peary believes that progress by this means will be practically unmolested. The party will at least avoid the dangers of Arctic seas with moving ice fields and bergs. The explorer intends to reach in that way the extreme northern limit of Greenland coast. If the sea is frozen he will continue his sledge journey towards the pole. The theory is that the sea will be found sufficiently frozen to permit travel as through Greenland. Mr. Peary expects to return to Whale Sound by the end of the whaling season of 1892, in time to meet a whaler on which the party can return to the United States. If Mr. Peary does not reach the pole, and only succeeds in going through Greenland, his expedition will not be without a result. The interior of Greenland is unknown and the results of the Peary expedition will be new material. Mr. Peary has had some experience in that country; he has made observations a short distance from the coast line, and on them he bases his scheme for the present expedition. He will go equipped with astronomical instruments and apparatus for scientific observation, and his party will be composed of men recommended for the task by their hardihood and mental fitness. It is confidently expected that observations will be easily obtained on an overland route, and the outlook for results is better than that of the hazardous sea journeys toward the pole.

OUR PRODUCTION OF PRECIOUS METALS.

According to the report of the Director of the Mint, just published for 1890, the gold product of the United States in that year was $32,845,000, an increase of $45,000 over the product of the preceding year. The silver product of our own mines approximated 54,500,000 ounces, corresponding at the average price of silver during the year to $57,225,000 and at the coming value of silver to $70,464,645, against a product of 50,000,000 fine ounces of the commercial value of $46,750 000 and coining value of $64,464,464 in the preceding year, nn increase of 4,500,000 fine ounces in the silver product of the United States last year. The silver product of our smelters and refineries was 64,920,927 fine ounces. The total value of the gold deposited at the mints during the calendar year was $56,217,105, of which $31,234,342 was domestic bullion, $4,352,422 foreign gold bullion, $8,857,447 foreign gold coin, $558,386 light weight domestic gold coins, $3,762,364 old jewelry, plate, etc., and $7,449,141 redeposits. The total amount of silver offered for sale to the Government during the year was 68,130,457 fine ounces, and the amount purchased 37,594,373.75 fine ounces, costing $39 991,840, the average cost being $1.06 per fine ounce. The coinage executed during the last calendar year was the largest in the history of the mint service, aggregating 124,025,365 pieces, of the value of $61,054,882.84. as follows: Gold, $20,467,182; silver dollars, $38,043,004; subsidiary silver coins, $1,159,904; minor coins, $1,384 792. In addition to the coinage, gold and silver bars were manufactured to the value of $38,593.198, of which $29.498,606 was gold and $9,094,592 silver. Gold bars were exchanged for gold coin, principally at the Assay Office at New York, of the value of $23,636,865. There was a marked improvement in the price of silver during the

past calendar year, the price reaching the highest point in twelve years. The fluctuations covered a range of 26 per cent.—a wider range by far than in any previous year. At the commencement of the year silver was quoted at 98 cents per fine ounce. It reached $1.21 on August 19, and closed on December 31 at $1.04½. The average price during the year was: In London, $1.04.6; in New York, $1.05. At the lowest price reached during the year the value of the silver contained in the silver dollar was 74.8 cents; at the highest price, 92.6 cents. The average price was 80.9 cents. The amount of precious metals used in the arts in the United States during the calendar year was: Gold, $18,105,901; silver, $9,231,178. The metallic stock of the United States was approximately on January 1, 1891: Gold, $704,597,128; silver, $486,545,076. Total, $1,191,142,204. Owing to the brief time since the close of the last calendar year, the statistics of the produce of gold and silver in the world by producing countries for the calendar year 1890 are not complete. Complete returns, however, have been received from Russia, Australasia, South Africa, British India, Venezuela, and a few other countries, based upon which the Director estimates, as a mere approximation, that the gold product of the world for the calendar year 1890 was $118,490,000, a falling off of $3,007,000 from 1889; and that the silver product of the world was 130,650,000 fine ounces, an increase of $7,859,375 fine ounces over 1889. The report is replete with valuable statistics on the production, coinage and movement of the precious metals throughout the world.

AMERICAN CONTRASTS.

ANTICIPATED COMMERCIAL INTERCHANGES BETWEEN NORTH AND SOUTH AMERICA.

The principle of "reciprocity" which, when broached a year or so ago, was denounced by a certain class of politicians as antagonistic to a protective tariff, is described, as to its effects upon our South American commerce, by a Washington correspondent in the following graphic manner: Forty-five millions of people south of the Gulf of Mexico and the Rio Grande produce no breadstuffs. Wheat cannot be profitably grown in South America outside of Chile and the Argentine Republic, because the climate is not suited to its cultivation. Thus it comes about that ordinary bread is regarded there as the greatest and rarest of luxuries, so that the prudent housewife, at the conclusion of a repast, locks up the bread in the cupboard and leaves the wine on the table. The heavy import duties imposed by the South American countries upon wheat and other breadstuffs make bread so costly that only the wealthier classes can afford to eat it. It is the same way with codfish, imported from New England, which, under the name of "bacaloa," is esteemed as great a luxury as is terrapin here. At a recent State dinner given to the diplomatic corps by the president of Guatemala, codfish was made to compose five of the nine courses, cooked in as many different ways. Supplies of this delicacy, which retails at sixty cents a pound, are brought, dried and salted, from Boston. Butter is as rare a luxury in South America as bread. The sort one pays thirty cents a pound for here sells there for $1 a pound. For every pound of this commodity manufactured in that part of the world 1,000 pounds are imported from abroad. Again it is the climate that is at fault. There are cows, plenty of them, and the milk has the usual amount of cream; but the cream will not rise. Besides, there are no conveniences for refrigeration, such as cool spring houses, etc. All these things will suddenly be made cheap for the people of South America when the reciprocity treaties have been signed, as has just been done with Brazil. They will no longer be compelled to pay seventy cents a pound for hams and a corresponding price for bacon, as hitherto. For they cannot raise hogs, for lack of corn to feed them with, and anyway these animals do not seem to thrive in warm climates. South of Mason and Dixon's line in this country they present a degenerated type, the unwieldy and corpulent porker of the North being transformed into the "razor-back." These and other agricultural products the South American republics will buy from the United States, admitting them duty free, so that an enormous and most profitable market will at once be opened to the farmers of this country. The same market will also be thrown open to all our manufactured goods, such as cotton goods, leather goods of all sorts (from shoes to trunks), hardware, glassware, cutlery, and particularly machinery. They are not manufacturing peoples, and they will always be obliged to import all such things. These nations, which have been transformed into republics by a series of revolutions, were originally colonies of Spain, and are at this day peopled by most highly civilized Spaniards, by descent, who speak the tongue of their mother country. Brazil, a Portuguese colony, is the exception. However, the same may be said of the Portuguese as of the Spaniard, that he has no notion whatever of mechanics. The Latin American never invented anything worth mentioning. If he breaks a machine, he doesn't know how to mend it. All the machinists, mechanical engineers and mechanics of all sorts in South America are imported from abroad. For some reason, which only an anthropologist can attempt an explanation of, warm climates do not produce inventors. Furthermore, they do not seem to give birth to go-ahead, creative people. Whatever is done to help the advancement of the South American republics is the work of foreigners. This very reciprocity business, which is to be of such enormous benefit to these republics, is being engineered by men of enterprise from other lands, who, like Mendonca, have assumed large property interests in Brazil, the Argentine, Chile and elsewhere. If the foreigners, including those from the United States, were all withdrawn from South America to-morrow, there would be a general revolution within twenty-four hours. The people, notwithstanding their civilization, equal in most respects and superior in some to our own, do not know how to take care of themselves or to achieve progress. Nothing does the Latin American originate; almost never does he so much as write a book. Brazil estimates its loss of revenue by the removal of duties on imports from the United States, according to the treaty just signed, at $5,000,000 yearly. The other republics will lose proportionately when they come into the agreement. But they are willing to make the sacrifice for the sake of finding an open market in this country, tariff removed, for their coffees sugar, rubber, cochineal, woods, chocolate and cinchona. The taking off of duties on these commodities brought from South America at our ports will give the greatest possible encouragement to planters, and all their agricultural industries will be enormously stimulated. Coffee is the great product of that part of the world, though rubber, gathered all over it save in Chile and the Argentine, perhaps equals it in value. The sugar of Brazil stands with these two. For the quality of its fleeces the Argentine is celebrated, as well as for the hard and beautiful woods so useful for veneering purposes, which are not to be found anywhere else in the world except in Central America. All these things ought to become much cheaper for us before long. The guava jelly so prized as a luxury in this country is less esteemed in South America than the preserved fruits imported from the United States, which are regarded as dainties fit for the gods. They are so costly, however, that only the rich can afford to indulge in them. Many things which are considered luxuries here are despised by them, because they are so common. They do not eat bananas, save occasionally fried, but feed them to the hogs. More delicate fruits they have which they prefer, as we should, if they would stand a voyage and keep. For example, there is the "sepote," as it is called, the flavor of which precisely resembles baked custard. Frozen in an ice-chest, it tastes exactly like frozen custard. Another fruit is the aguacate, which tastes like nothing else in the world that can be called to mind, but resembles in appearance a small muskmelon as big as a beet. For eating, it is cut in two, after which the seeds are taken out, and it is gobbled like cantaloupe. There are many others equally strange and delicious. In South America no bread is ever made in a private house, for the reason that stoves have been unknown there until within two or three years. Recently an enterprising Yankee has been carrying them by the shipload from the United States, and they are selling rapidly in Brazil and the Argentine. All the bread is baked by big companies, which call themselves by the most extraordinary names. One company's establishment is the "Bakery of the Holy Spirit;" another bears the sign, "Bakery of the Poor Devil;" still another is called the "Bakery of Jesus Christ." All this entirely in a spirit of reverence, be it understood. The bread is supplied to families in small cakes, somewhat like breakfast rolls, which are carried in baskets on men's heads. People buy as many as they happen to want, at about five cents apiece. There is no such thing as a loaf of bread, unless it is made by special order, in which case it will cost fifty cents or more. To supply the interior districts with bread, the cakes are carried in quantities on muleback hundreds of miles. When they reach their destinations they are exceedingly stale, as well as dear, but the well-to-do folks buy them and steam them, regarding them even thus as the greatest of delicacies. Corn can be grown to some extent in the highlands, and this is used as a substitute. The lower classes generally employ for the same purpose beans and the manioca yam, from which what is called "tapioca" is obtained. Biscuits and crackers of all sorts will be greatly in demand by South America. Every effort to grow wheat there, outside of the Argentine and Chile, has been ineffectual. Some has been cultivated on the high plateaus of the north, but the crops were scarce sufficient to feed the hands that harvested them. Venezuela, in order to compel the cultivation of the grain, put a prohibitory duty on imports of it, while Guatemala, with a similar object, offered large bounties to wheat farmers. But all trials proved that the climate and soil of the tropical zones are not suited to the product. Over large areas of South America the agriculturist is confronted by a very curious and paradoxical problem. The soil is so excessively fruitful that he finds it difficult, if not impossible, to get his living out of it. He cannot keep down the luxuriant natural vegetation, in order to replace it with cultivated and valuable plants. Grass of Brobdingnagian growth springs up faster than he can cut it down or pull it up, while vines rivalling in rapidity of development that which bore Jonah's famous gourd overwhelm his crops, and weeds of all sorts array themselves in competition with whatever he tries to raise. But, with the progressive improvement in agricultural machinery and appliances, there is destined soon to arrive a time when this wonderful southland, subdued by the plough, will be the most productive region on the earth. The gold and diamond mines of Brazil are the richest in the world; but the gold mines remain almost wholly undeveloped, owing to lack of transportation facilities and of machinery to work them. Some notion of their richness may be obtained from the experience of a Portuguese company which, in the year 1831, turned a river in the province of Goyaz out of its course by building large dams. Only one day's work was done in getting out sand from the river bed after the stream was turned off, for the same evening the dams broke, and the water, resuming its old course, drowned three hundred slaves and entirely destroyed the results of a twelvemonth's labor. But the sand dug out on that day yielded thousands of gold bricks, which paid several times over for the entire investment that had been made in the enterprise. This district is now owned by capitalists in the United States, and before long it is intended to turn that river once more and delve for its store of yellow wealth. The Moro Velh in Brazil is

considered the richest gold mine known. The Portuguese opened it three hundred years ago; it was reopened seventy-five years ago by an English company, and its workings now extend three miles under ground. Unlike other gold mines, its product is continuous and never failing. The finest gold lace in the world is made in Ecuador, of native metal. There is no very extensive market for it, and it is sold chiefly to rich people, who make presents of it to friends at home and abroad. There are no diamonds now produced equal to those of Brazil, which is a country just about the size of the United States. They are usually perfectly white, and none of them have the yellow hue which so greatly diminishes the market value of the South African stones. The diamond producing formation is peculiar. Very valuable gems have often been found lying exposed on the plain, while others have been discovered so imbedded in rock that it was necessary to chisel them out. Great companies work the mines, and fresh ones are being continually opened. It is quite certain that only some of the deposits have been struck as yet. The wild Indians in the province of Goyaz, six hundred miles from the sea, constantly bring down fine diamonds from the mountains for the purpose of selling them. Pockets in the beds of the streams, which have formed natural receptacles for detritus, often yield diamonds as a reward for patient scooping. Some of the finest diamonds in the world were found in Brazil—notably, one called the "Star of the South," now being cut at Amsterdam, which is way ahead of the Kohinoor. At a recent state dinner given by the Brazilian minister for foreign affairs, the host stated, in response to a toast, that South Americans were Yankees too, as could be proven by the fact that, whereas the national dish of the United States was pork and beans, the national dish of all the southern republics was beef and beans. The beef they use for this purpose is "jerked," the process being to cut the animal into strips, which are dried with salt. If you want to buy a pound, half a yard is cut off for you by the butcher. This, with baked beans, is indeed the national dish of South America. The usefulness of this plan of reciprocity, both to the United States and the South American republics, is expressed when the fact is stated that everything we make is something they want, and vice versa.

ELECTRIC SERVICE.

ELECTRICITY'S INGENIOUS CONTRIBUTIONS TO HUMAN COMFORT.

How far can the new illuminant, electricity, aid us in hours of work and conduce to the comfort and peace of our hours of rest and recreation? The engineers have supplied the current to the house, and it becomes necessary to consider how to arrange, clothe and decorate the lamps, so that the light may be a source of pleasure and not of irritation. So far the artists have not kept pace with the engineers, and most of the pendants and electroliers found at present are wanting singularly in imagination and grace. They are far too heavy and clumsy for the light lamps that they support. The lines and curves are conventional and ungraceful, and the lamps are often so placed that they shed their light directly in our eyes, instead of reflecting it from the objects that should be illuminated by them. The shape of the lamps themselves should be considered and worked into the design, so that the whole may be harmonious, a quality in which the present models are deficient, electric lamps generally appearing as if they had been stuck or hung on as an afterthought. So far designers of electric light fittings are too much the slaves of precedent, derived from their experiences with gas, candles, oil, torches, and other relics of the past, forgetting that the shapes of the holders of all these lights are determined by the necessity of leaving a clear space above them for the escape of hot and foul air, and also by the condition that they must be within reach of the taper or match used for lighting them. Not till they realize fully their freedom from these two limitations will designers begin to appreciate the artistic possibilities of the new illuminant, and give us original designs of flying figures, birds and carved Cupids, delicate chain work, faintly tinted glass, and china powdered with flowers. Bright centre lights foreshorten distances, and enhance the feeling of narrowness, which cleverly arranged lamps, placed so as to brighten the sides and corners, should help to dissipate. Modern heavy brass models of dragons, griffins and dolphins are to be especially recommended as electric lamp holders, as good and inexpensive designs are to be bought, but they should always be fixed with the lights hanging downward, not crawling up the wall, like poor overladen insects carrying luminous eggs. Very highly ornamented fittings will often have a common appearance. Grace, simplicity, and beauty of form and color should be sought before everything. Each of the decorative lights should have a separate switch, to be used when required. Outside the drawing-room door is a beautiful place for a decorative light. The vestibule light need not always be kept burning. It should be turned on by the servant who answers the door, or connected after dark with the front-door bell, so that when the bell is rung the light would be switched on. An electric cigar lighter should hang near the front door, which will save the daily hunt for matches and consequent irritation of the master of the house and his friends Electricity may also afford us protection at night, as an ingenious burglar alarm has been devised by which, from a controlling switch in the master's bedroom, the whole passage, hall and stairs can be illuminated, so that, when the "gentle burglar comes a-burglaring" light may be shed on his nefarious practices. We owe to electricity the banishment of that faint and sickly odor of paraffine that haunts our staircases after the daily procession of the lamps to the drawing-room. In the sitting-room in which we live there should be two kinds of lights—a faint, shaded light to read, talk or think by, and a brighter light to "play by." With a bright light meditation will not be fertile, and with a dim light play will not be vigorous. It is difficult to decide beforehand exactly where we wish to have the standards and reading lamps placed. If real luxury and comfort is desired, a pair of electric wires should be placed along the skirting board round each of the sitting-rooms, and sockets should be fixed upon them at intervals, so that any standard can be moved to any part of the room, and to facilitate this all the plugs and sockets in the house should be interchangeable. It is impossible to over-estimate the daily comfort gained by having electric lamps fixed in all the principal cupboards, linen and housemaids' closets, wine and coal cellars, bath-rooms, etc. The working cost of these is not worth considering, owing to the short total of hours that each burns in the year. It is very easy to economize when first the installation is put in, but it is a great mistake to do so, as the initial expense is small in comparison to the daily comfort of well-arranged and well-distributed lights, and eventually economy in the quantity of electricity used — which, it must be remembered, is paid for by meter—will result from thus being able to light the particular corner of the room in which we wish to sit, instead of illuminating the whole room from the centre or walls on every occasion. In the drawing room, I believe that whatever the illuminant used, the light of the future will be a reflected light. The room should be flooded with a warm, soft radiance, and we should be unconscious of the source from which it proceeds; this can only be obtained by the use of reflected light, but when it is remembered that powerful electric lamps can be placed within a few inches of the most beautifully decorated ceilings without risk of injury to them, and their direct rays intercepted by silk, or any other semi-opaque substance, it will be seen at once what opportunities electricity affords for the effective illumination of our drawing rooms. It makes it possible to use decorations on the ceilings which any combustion light would destroy. If chandelier lighting is adopted, Venetian glass with different colored silk shades of the exact tints of the glass itself are effective. With cut-glass chandeliers the shades should not be all alike, but should be in different tones of the same color. If there is a window guarded by heavy curtains that seem to need relief, a large ornamental glass bowl, vase, or bottle can be hung with the lamp inside it. Wonderfully little light is absorbed by these glasses, if carefully chosen, and the rays will look like the imprisoned genie of the Arabian Nights, and will delight the imagination as well as the eye. Electrical firms have had to be patient for many a weary day, while the public were making up their minds whether to adopt the light or not; and now it is the turn of the public to be patient, for the demand at present is greater than the skilled supply. A pendant should not hang in front of a lady's looking glass, as she will see only the reflection of the lamp instead of her own hair. A pendant should hang on each side of the looking glass, and should be arranged to draw up and down. Electricity enables us safely to read in bed. A hinged bracket lamp should project from the wall over the bed, and should be shaded with silk. This lamp should be provided with one of the new switches, which are made to rest in three positions, viz., off, on, and an intermediate position giving half light. This is invaluable in case of illness. The dinner should be brightly illuminated. There should be no fierce reflection from the tablecloth and silver. Too dark red, lemon, and canary yellow should be avoided as shades. A fringe, however handsome, is not satisfactory. No ceiling light should be allowed to interfere with the charm of the light being concentrated on the dinner table, and it must always be remembered that in the dining room the dinner table is the first consideration. The rest of the room should be softly but not brightly lighted. A hanging pendant which will draw up and down is suitable for a quiet family meal, and makes a good centre for the extended table used for a dinner party. The ends of this larger table should be lighted by standards placed upon it. The wires from these standards pass through a small slit in the cloth and through a hole in the table to a socket in the floor. Old silver and china candlesticks can be well adapted for these standards.

NATIVE LEAD.—Lead in the United States amounted in 1890 to 187,000 tons of 2.000 pounds, or a little less than in 1880.

WATER PRESSURE.—To find the pressure in pounds per square inch in a column of water, multiply the height of the column in feet by 434. Approximately, every foot of elevation is called equal to one-half pound per square inch.

METALLIC MUMMIES.—A Frenchman, Dr. Variot, paints the skin with a concentrated solution of nitrate of silver, and reduces this with vapors of white phosphorus dissolved in sulphide of carbon, the skin being thus rendered dark and shiny. The body is then ready for the electric bath, which is served by a thermo-electric battery, giving a regular adherent deposit of copper if the current is properly regulated. With a layer of one-half to three fourths mm. thick the envelope is solid enough to resist pressure or shock. Dr. Variot further incinerates the metallic mummy, leaving holes for the escape of gases. The corpse disappears, and a faithful image or statue remains.

NEW BLEACHING FLUID.—Ozonin, a bleaching fluid, patented by L. Schreiner, is made as follows: 125 parts resin are dissolved in 200 parts of oil of turpentine, to this solution is added a solution of 22.5 parts potassium hydrate in 40 parts of water, also 90 parts hydrogen peroxide. The resulting jelly exposed to light changes in two or three days into a thin fluid called ozonin, this same change takes place in the dark, but then requires some weeks for its completion. An emulsion of one gramme ozonin in one liter water acts as an energetic bleaching agent on fibers, wood, straw, cork, paper, also on solutions of gums and soaps; the bleaching effect is as energetic in acid as in alkaline solutions.

APHASIA.

A SINGULAR DISEASE AND ITS GROTESQUE EFFECTS.

Aphasia is defined in Ranney's "Lectures on Nervous Diseases" as an impairment of the idea of language or its expression, independent of paralysis of the tongue. It is commonly described as of two varieties—the sensory or amnesic form, in which the memory of words or of symbols is more or less effaced, and the motor or ataxic form, in which the memory is perfect, but the subject cannot properly pronounce words from an inability to perfectly co-ordinate the muscles concerned in articulation. In the amnesic variety the most familiar objects are commonly misnamed, and a great peculiarity is that the subject is often aware that the error has been committed, but is not able to correct it. Some patients forget only names; others forget numbers. In certain reported cases the names of things only in dead or foreign languages were retained; in others the reverse had been observed, the patient losing all knowledge of acquired tongues. The sound of words often will not be recognized when the letters which form them will, and the reverse of this condition is not infrequently met with in aphasic patients. In the ataxic variety of aphasia the patient can usually write what cannot be spoken, thus proving that the memory of words seen or heard is not effaced, but rather the ability to so co-ordinate the muscles of speech as to properly pronounce the words. Several cases have been found where the amnesic form gave place to the ataxic. An explanation of the general causes of this disease cannot be well given without using technical terms, which would be incomprehensible to the lay mind. It is sufficient to say that investigators have concluded that aphasia is consequent upon lesions of those certain areas of the brain wherein are centred the power for the normal exercise of the functions affected. The different phases or varieties of the disease indicate the parts affected. The most interesting facts in connection with the cortical cells of the brain have been demonstrated during the investigation of aphasia. Prof. Charcot reported a case where a gentleman could read by tracing the lines with his finger when a lesion of the brain had deprived him of his ability to recognize written or printed characters by sight. He could write with ease, but could read what he had written only by retracing the lines. Paraphrasia is the substitution of wrong words or symbols in conversation or writing. The remarkable fact is that the patient is conscious of his error, but cannot correct it. Nouns are more frequently lost than verbs. Patients of this sort often exercise great ingenuity in avoiding during conversation or writing the words they fail to properly recall. By means of oddly constructed sentences they often hide this defect in speech from strangers. In true motor aphasia patients cannot articulate correctly, a fact of which they are painfully conscious, and they often remain mute rather than subject themselves to ridicule or criticism. The ludicrous part of this phase of the disease is that in case certain words or phrases are retained or regained after the attack these words or expressions are used in a peculiar automatic way by the patient in reply to any question asked. These phrases or words are, of course, in the majority of cases absurdly irrelevant to the question asked. Dr. Ranney, in his work already quoted, cites a case reported by Hammond where a patient would reply "Hell to pay" under all circumstances. Another patient's unvarying reply was, "I want protection," and a third would say nothing but "Umbrella, umbrella." That condition in which, from cerebral disease or other causes, the power of writing is suddenly or gradually lost is called agraphia. The explanation of this condition rests in the fact that the patient has lost certain memories which previously enabled him to make the necessary finger movements for placing upon paper results obtained by his mental processes. This is certainly to the lay mind a most remarkable condition of affairs. It well illustrates the direction of the muscles from the brain, for the directing force being absent the muscles cannot act. An agraphia patient cannot write from dictation or copy from a printed slip, though he is not paralyzed or affected with writer's cramp, and though he can perform all other movements of the fingers not connected with the writing of letters or figures with his accustomed delicacy. The memory alone is at fault. In some instances delicate finger movements required in the mechanical trades or the use of musical instruments have been known to be suddenly taken away by a similar loss of motor memories. Such cases are not included under the term agraphia. "Word deafness" and "word blindness" are forms of sensory aphasia due to lesions of different portions of the brain. The word deafness results from a lesion of the first temporal convolution. Patients suffering from it cannot be made to understand spoken language, because their centres of hearing have been impaired. It must be understood, however, that they are not deaf to sound. They can hear a word spoken, but cannot tell what it means, because they cannot appreciate the value of certain sounds. Their own tongue is as unintelligible to them as an unknown foreign language. This condition prevents the patient from speaking correctly because of his inability to recall the proper sound of many words previously employed by him. His efforts to read aloud will result in his utterance of a most ludicrous jargon of unintelligible sounds. The patient, however, will proceed solemnly with his reading, not being aware that his utterances are unnatural or inexpressive of the ideas he wishes to convey. The following case is quoted from the books: One such person was asked to read aloud the sentence: "You may receive a report from other sources of a supposed attack on a British Consul-General. The affair is, however, unworthy of consideration." The patient proceeded to read seriously and steadily, as directed, and as nearly as could be taken this is what he said: "So sur wisjec coy wenement apripsy fro freny fenement wiy a seconce cos foz no Sophias a the freckled pothy conollied. This affair eh oh cont oh curly of consequences." This patient could not write to dictation, though he could sign his name well and copy accurately. As he made each letter, however, he would attempt to name it aloud, but always pronounced some other letter. Word blindness is due to a lesion of the visual centres in the occipital lobes. It is accompanied by a loss of memory of the meaning of printed or written symbols. Patients afflicted with it can recognize familiar faces, but they cannot read correctly. They cannot properly read a given selection. They can often write from dictation, but cannot read what they have written. Unless "word deafness" is also present their conversational powers are not impaired. One patient, whose case is cited by Dr. Ranney, when asked to read, would make the most elaborate preparations, putting on his spectacles and taking some time adjusting himself comfortably. Then he would read aloud, saying things that had not the remotest connection with anything in the print before him. He was asked to read the following note:

Dear Sir:—I shall be much obliged if you will let me know whether or not you consider it likely that A. B. will recover.

He looked at it very carefully, and then slowly, deliberately, and without much hesitation he read:

"*Dear Sir:*—You are requested to bring this note with you to the infirmary."

Then he said: "That is what I make of it; I don't know whether it is right or not." This same patient often tried to read a newspaper aloud, and his wife said that he read a lot of stuff all made out of his own head. On one occasion she took the paper and read it to him He was quiet for a time and then asked: "Is that what it says in that paper?" Being assured that his wife had read correctly, he said: "Well, then, I must be an idiot." This gentleman often found fault with the newspapers, saying he did not know what was the matter with them, they contained such silly stuff nowadays. When, however, he found that the fault was in himself he gave up reading the papers. "Word blindness" would be a good excuse for a pupil who misconstrued when wrestling with his Latin recitation. It is not uncommon for word blindness and word deafness to be in conjunction, a fact which is easily explained by the close proximity of the visual and auditory centres. The term "apraxia" has been applied by some authors to cover a class of cases where, by disease of the cortical centres of sight, the patient has been rendered psychically blind, not to the meaning of words, but to the most familiar objects and their uses. Such patients, after being disrobed and having their garments returned to them, express utter ignorance of the garments or their uses, and have to be given instructions as to the manner of dressing themselves. Other patients are afflicted with "amimia"—that is, a lack of power to express the psychical states by means of gestures, though the meaning of gestures made by others may be appreciated. Recovery from all these various forms of aphasia is possible, but difficult. In cases of word blindness the patient has to be instructed in his native tongue as a child is instructed. Where recovery fails, paralysis and insanity often follow.—*San Francisco Chronicle.*

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

March.

MEAT.—Beef, mutton, ham, kidneys, liver, venison, sausage, veal.

GAME AND POULTRY.—Grouse, hare, pigeon, chicken, duck, turkey, goose, snipe.

FISH.—Bass, cod, eels, carp, catfish, flounders, halibut, herring, lobsters, mackerel, mussels, oysters, perch, pike, rock-fish, salmon, smelt, white-fish, trout.

VEGETABLES.—Artichokes, beans, carrots, celery, garlic, lettuce, onions, parsley, parsnips, potatoes, shallots, spinach, turnips, watercress.

FRUITS.—Apples, bananas, oranges.

PRACTICAL RECIPES.

SAVORY SOUP.—Chop fine a good-sized onion, shred up enough parsley, sage, and sweet herbs to make a tablespoonful of each, and put them all in a quart of beef or other soup and let them boil for a few minutes; then put the soup-kettle back on the stove, where it will simmer gently until about half an hour before the time to serve it; then thicken it with two teaspoonfuls of flour rubbed smooth in a little cold water; just before serving add two hard-boiled eggs, chopped into small pieces, and serve.

VEAL CROQUETTES.—Chop up very fine any scraps of cold cooked veal; season highly with grated lemon peel, sage, thyme, pepper and salt. Put a tablespoonful of butter and one of flour to cook in a saucepan; thin out with milk or cream to the consistency of very thick cream; add to this the chopped meat; pour out on a plate and let it get cold; form into egg-shaped balls, dip in egg and cracker crumbs, and fry in very hot lard. Fry only three or four at a time, for putting very many at one time into the lard cools it, and they are apt to be spoiled.

VEAL FRITTERS.—Cut cold veal into very small bits; sprinkle salt, pepper, and a little lemon juice over it, and let it stand for about an hour; then make a batter, allowing three eggs, a teaspoonful of baking powder and some salt to a pint of milk, with sufficient flour to make it the right consistency; put the meat into this, and fry by spoonfuls in boiling hot lard.

BREAKFAST POTATOES.—Cut up two cupfuls of cold potatoes; season them with pepper, salt, chopped parsley, and a very little lemon juice; put them in a pan with a tablespoonful of butter; cook for a moment; then pour over them a cupful of soup stock; cover and simmer a few moments before serving.

FRIED OYSTERS AND CELERY.—Put in the pan you are to fry the oysters two tablespoonfuls of equal parts butter and beef drippings; add to this a small cupful of chopped celery; cook it for a moment, mix it up, and in this fry the oysters which have been drained and dipped in egg and crumbs. Fry until a fine brown, and serve.

PULLED BREAD.—This is to be served with soups or with cheese. Take a very fresh loaf of baker's bread and pull out the insides, divide it into rough pieces, lay them on a baking pan and put in a moderate oven until they are brown and crisp.

INDIAN PUDDING.—Put four cupfuls of milk in a farina-kettle; when it comes to the boiling point sprinkle gently in two and a half scant tablespoonfuls of Indian meal; let it cook a good ten minutes, stirring frequently; then add a tablespoonful of butter. Beat up three eggs and to them put four tablespoonfuls of sugar; remove the kettle from the fire and add the eggs to the milk and Indian meal; turn it into a buttered dish and bake for about an hour.

CONDENSED MILK.

We call special attention to matter in this issue all about condensed milk.

ADULTERATED FOOD.

A WASHINGTON CORRESPONDENT DRAWS A MELANCHOLY PICTURE.

The wholesale manner in which sensational newspaper writers overstate their themes is well shown in the subjoined article from the *Hartford Courant*, which publishes it as a communication from its Washington correspondent. Its extravagancies, spun from a slender thread of truth, do not call for serious refutal at our hands.

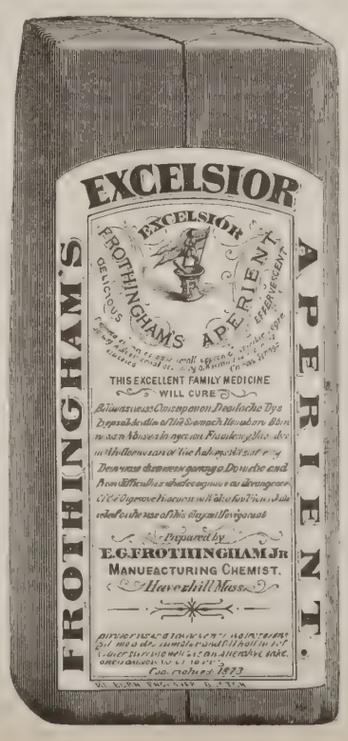
From recent exhaustive investigations of the subject the U. S. Department of Agriculture estimates that 15 per cent. of the total food supply of this country is adulteration, representing an actual loss to the people of $675,000,000. The inventive genius of the American has been taxed to devise methods of almost incredible ingenuity for the sophistication of every imaginable thing intended for eating. Scarcely a brand of the so-called "package coffees," contains any coffee. They are mainly composed of peas, chicory and rye, roasted and ground. The small "chefus" nut occasionally found in the market is used for the same purpose, as well as almond shells, which, treated with molasses and ground, make a fair imitation. A process is also applied to coffee which reminds one of the plan by which, when Jumbo died, two elephants were made out of his remains, one being the skeleton and the other the stuffed skin. The coffee is submitted to processes by which the essential oils and the essences are extracted from the beans, which are then sold as coffee, while the essences are manufactured into extracts and sold as such. A very usual method is to take the coffee beans thus shrivelled by the extraction of the oils and essences and soak them in sea-water, which "plumps up" the berries and conveys a pleasing deception to the public. If you want good coffee, it is a fairly good rule to avoid the highly polished, colored and plump grains, and purchase the poorest looking article you can find. Bologna sausage has always been regarded as a mystery, but no one would readily suspect adulteration in it. And yet not only is the mixture of which it is composed commonly more or less decomposed, tainted meat, being cheaper than fresh, but the condition of the material is effectually disguised to the purchaser by what is known as a "coloring," made of salt, saltpetre, borax, alum and Venetian red. Colorings play an important part in the business of the adulterator. Three small "greened" pickles contain the full medicinal dose of sulphate of copper, two grains. Vermicelli manufacturers use poor flour, whitened with pipe-clay, and supply the absence of eggs with saffron and chromate of lead. Strawberry ice cream commonly is made by dispensing with the fruit, using aniline red and amyl ethers instead. Persons who are addicted to that very popular drink called whiskey, ordinarily regard the fusel oil which it is apt to contain when too new as detrimental to their health, but the Government chemist says that one plate of ice cream or a single glass of soda water frequently contains more of this deadly product than five glasses of poor whiskey. Brandy nowadays, instead of being produced by the fermentation of grapes, is a complex mixture, derived by distillation from grain, potatoes, and the refuse of beet-root refineries. Potato spirits and beet alcohols, most deleterious of all varieties of spirits, are sent from Germany into France in vast quantities, to be flavored, colored and labelled to meet the wishes of American connoisseurs in cognac. Cider vinegar is almost never made from apple juice, and an article claimed to be pure orange juice, and found on sale as "orange cider," proved upon analysis to be only sweetened water, sharpened up with citric and tartaric acids, and flavored with the oil derived from orange peel. Practically all of the flavoring extracts used more or less in every family are mixtures of acids and drugs, the manufacturer of a pure article having no chance in the market. From 40 to 50 per cent. of the drugs sold in apothecary shops are adulterated. The licorice drops given to children for colds are made from candy factory sweepings, a fair quantity of dirt being included. Artificial jellies are composed of gelatine, sugar, artificial flavoring extracts and cochineal. Two-thirds of all teas from China and Japan are colored with Prussian blue and other chemicals. Cheap fish are packed and sold under the names of superior kinds. Honey is adulterated with glucose. White and black pepper are falsified with wheat, rice, corn and ginger. Most farinaceous substances which have become damaged and unsalable are rendered serviceable by the "spice mixer," being transformed by roasting and grinding into products closely resembling the various spices in appearance, lacking only a little seasoning with the real article to give the characteristic odor and fit them for market.

THE DOCTOR WHO SUCCEEDS—A physician who understands human nature, who plays with the baby, makes friends with the children and listens to the woes of the good wife and mother, is the fellow to whom the master of the house most cheerfully pays the largest bills. It isn't the medicine that's bottled up, but it's the comfort, the consolation that are unbottled' that mark the broad line between an unsuccessful and a popular physician.—*Press.*

CLEVELAND'S
SUPERIOR
Baking
Powder.

The Official Reports of the
United States Government, 1889,
Canadian Government, 1889,
New Jersey Commission, 1889,
Ohio Food Commission, 1887,
prove that Cleveland's is
THE STRONGEST
of all the pure* cream of tartar baking powders.
*Ammonia or alum powders, whatever their strength, should be avoided as injurious.

25 CTS. PISO'S CURE FOR CURES WHERE ALL ELSE FAILS. Best Cough Syrup. Tastes good. Use in time. Sold by druggists. CONSUMPTION 25 CTS.



HOW OFTEN

you feel the need of a reliable remedy for the easy and safe cure of Headache, caused by bilious trouble or dyspepsia.

FROTHINGHAM'S APERIENT

is what you need. It comes in a fine white powder, and you take two teaspoonfuls, and add a little water, and drink while foaming.

IT'S VERY PLEASANT TO TAKE.

All Druggists should have it. If not, send FIFTY CENTS for a large trial bottle, and receive it by Express, prepaid, Address,

S. C. BASSETT,
SOLE U. S. AGENT,
HAVERHILL, · MASS.

NOTES REGARDING THE USE OF

MILKMAID BRAND CONDENSED MILK

FOR INFANTS.

HOW TO JUDGE THE QUALITY OF CONDENSED MILK.

The general appearance when poured from a spoon should be homogeneous and glossy; the more glossy the better. It should be ropy or stringy, like very heavy syrup. The color should be that of cream, but the color varies according to the season of the year in which the milk is condensed, the same as milk not condensed varies in color. Milk is more yellow in summer when cows are on pasture than in winter when they are fed on dry hay. Thickness varies with age. Thickening by age is *natural* to condensed milk; rapid thickening only proves that the milk is preserved in the best manner, and that it retains in the highest degree the characteristics of milk in its natural state. Condensed milk which does not thicken by age, or which thickens very slowly, is milk *abused in the process of condensing*. Consumers make a great mistake in supposing that the thinnest condensed milk is the best. The thinnest condensed milk contains the most water, and of course, less of milk solids or milk nutritives. The thickest condensed milk, if in sound condition, is the most valuable. There is a degree of thickness, however, that is inconvenient. If condensed milk is so thick that it will not run out when an opened can is inverted, it is troublesome to dissolve. If it is not actually hard, *very little stirring in the can* will render it sufficiently liquid for convenient use.—*From Scientific American, December* 27, 1890.

SHORT WEIGHT.

A can of condensed milk which does not weigh 18¼ to 18½ ounces does not contain a pound of milk.

When using a brand of milk one ounce short of full weight, the consumer loses the value of a can in every sixteen cans he buys.

Consumers are **wasting several hundred thousand dollars** per year by buying short weight condensed milk.

CONDENSED MILK FOR INFANTS.

Children may suffer from over-feeding, or from food too rich and nutritive for proper digestion, as well as from receiving too little nourishment.

Through a mother's anxiety to do everything possible for her child, she not unfrequently permits its food to be prepared in so rich a form that it fails to thrive through indigestion, and the mother is led to the mistaken conclusion that the particular food in use is at fault, whereas the true cause may lie in the *manner* in which the food is employed.

A child may not always become ill by receiving more food, through richness or volume, than can be assimilated, but only that part assimilated nourishes, and the part not assimilated can serve no wholesome purpose.

One physician will recommend feeding infants with twice as rich food as another, and, to prove his directions correct, will refer to his experience with his own children. Another physician will argue that these same children would have thriven equally well, if not still better, had they received the same food less rich in form.

An infant does not require a frequent change of food, as mothers sometimes suppose. A proof of this is the fact that nature designs milk for the young, *without change*, for a period of at least eight or ten months.

So long as a child thrives well upon any particular food, it is advisable not to resort experimentally to any substitute—at least not before the period of teething has passed.

If any certain food does not agree with a child, either in one degree of strength or in another, then the trial of something else is the proper course.

Children, like adults, may become ill while receiving the best of food; for instance, a child nourished on mother's milk does not enjoy full protection against diarrhœa at any time, and all children, however fed, are liable to this and other complaints, especially during the time of teething; therefore the cause of illness should not always be attributed to the kind of food made use of. The cause, if it lies in the food at all, may be often found in the improper strength in which the same has been prepared, or in *failing to observe regular intervals in feeding*.

In nine cases out of ten a weak stomach is an abused stomach.

Those who make a practice of running for the feeding-bottle every time a child cries are incompetent, even though they may be mothers, to take charge of infants.

A child should not be fed while lying upon its back. Let the infant be held upon the left arm in an inclined position, not only while taking food, but for five or ten minutes afterwards.

AVOID MISTAKES.

Our **Swiss Milk,** for which many other kinds of milk produced in Switzerland are palmed off, is known by plain label, Milkmaid trade mark, and the full name, Anglo-Swiss Condensed Milk Co., **Cham,** Switzerland.

Our name is closely imitated by leaving off the word "Anglo." If you call simply for "Swiss Milk," you may be deceived. Be sure that you see our full name, and **Cham,** Switzerland, on the label.

Milkmaid Brand, colored label, and **Rose Brand,** colored label, are produced at Middletown, New York, and Dixon, Illinois.

OBJECTIONS TO COWS' MILK, NOT CONDENSED, FOR INFANTS' FOOD.

1st. It is difficult to obtain it pure.

2d. If obtained pure, it is impossible to have it in the same condition at all hours of the day. Milk not condensed is subject to constant change, even before sourness can be detected.

3d. It lacks the uniformity of character and strength which is ensured by condensing milk in large quantities, whereby the milk from hundreds of cows is put together.

4th. The albumen of milk is more easily digested if the milk is condensed. Dr. F. D. Drewitt, of London, tells why.

5th. Milk not condensed is a powerful absorbent of any surrounding impurity, and may therefore serve as a medium for the transmission of disease. It is well known that the cause of fevers has not unfrequently been traced to the use of tainted milk. In several instances of this kind, which have been reported in public journals by good authorities, it has been observed that "those using Condensed Milk have escaped." The process of condensing sterilizes milk.

Read Dr. F. Dawtrey Drewitt's article from the London *Lancet*.

DIRECTIONS FOR PREPARING CONDENSED MILK FOR INFANTS.

It should be understood that it would not be practicable for us to give exact directions for employing Condensed Milk, for the reason that the amount of nourishment suitable for one child may be too little or too great for another.

Physicians and nurses must determine the strength or quantity of food to be given in each individual case; experience enables us, however, to give approximate directions to be followed for infants of average health and strength.

During the first weeks of infant life the following directions may be observed:

For the *first two days* give nothing but sweetened water; for the next five days a half teaspoonful of Condensed Milk with eight teaspoonfuls of water every two hours, day and night.

For the *second week*, ¾ teaspoonful of Condensed Milk with 12 teaspoonfuls of water every two hours, day and night.

Third week: 1 teaspoonful of Condensed Milk with 16 teaspoonfuls of water every two hours, day and night.

Fourth week: 1¼ teaspoonfuls of Condensed Milk with 18 teaspoonfuls of water every two hours, day and night.

Second month: 1½ teaspoonfuls of Condensed Milk with 21 teaspoonfuls of water every two hours by day and two to three hours at night.

Third month: 2 teaspoonfuls of Condensed Milk to 24 teaspoonfuls of water every two hours by day and about once in three hours at night.

Begin the fourth month with 2 to 2½ teaspoonfuls of Condensed Milk to 24 teaspoonfuls of water, and gradually, during the fourth month, increase the amount of Condensed Milk to 3 teaspoonfuls, with 24 to 26 teaspoonfuls of water, or with an amount of water equal to the volume the child will take at one time, and at this age feeding at longer intervals may gradually take place.

By the fifth month experience will usually show how to proceed; but Condensed Milk for any child of any age should never be used richer than one part of Milk to seven parts of water.

The spoon used for measuring Condensed Milk should not be dipped into the tin, but should be filled by pouring from another spoon.

The Milk should always be prepared immediately before using, and all possible care should be taken to keep feeding-bottles clean and sweet. They should be cleansed with hot water immediately after having been used each time.

The water used should be previously boiled and cooled. In preparing the diluted Milk do not boil it, but merely warm it to blood heat, about 100 deg. Fahr.

Our **Milkmaid** and **Rose** brands, as food for infants, are equal to any known American brands.

Our **Swiss Milk,** containing a little less sugar than any brands produced in this country, is often preferred for babies, and it commands the highest price of any brand in the world

CONDENSED MILK AS FOOD FOR INFANTS.

BY F. DAWTREY DREWITT, M.A., M.D.

Assistant Physician to the Victoria Hospital for Children and to the West London Hospital, etc.

The commonest objection to the use of Condensed Milk as food for infants is that it is too sweet. Of course it is very sweet; but, on the other hand, cow's milk is not sweet enough, and, when compared with human milk, very indigestible.

Cow's milk not condensed can only be made at all a possible food for babies by adding to it sugar and water, and so making it more like Condensed Milk, but even then it is not so digestible as Condensed Milk, and it is not difficult to see the reason. Place some cow's milk with its added sugar and water in a wine-glass; mix in another glass some Condensed Milk with water till it has, so far as one can judge by the eye, about the same consistence and opacity; stand the two glasses side by side, and add to each, as the stomach does, a few drops of nitro-hydrochloric acid and watch the result. They both curdle, but the curd formed in the wine-glass of Condensed Milk is distinctly more friable, more mixed with the watery part than the curd in the cow's milk, and after standing for some time this is still more evident, for the curd in the fresh milk separates completely from the fluid into a firm clot, while in the Condensed Milk it remains more granular, more broken up, and more mixed with the fluid. It is this hard clot of cow's milk, not condensed, which is more than anything else the cause of that only too well-known incessant cry of dyspeptic hand-fed babies.

Condensed Milk, of course, varies in quality, and it is important not to use any of the common, cheap kinds. Of those which are generally seen in the shop windows, the nurses at our children's hospital generally prefer the ORIGINAL ANGLO-SWISS MILK, the "ONE WITH THE MILKMAID ON THE TIN," as they call it, and it seems to me as good as any.

Everything depends upon how Condensed Milk is given. *It ought to be diluted with ten or twelve times its bulk of water, or with more than that if the child is thirsty;* and if any tendency to nausea remains, *about one-sixth of the water* ought to be lime-water, which still further neutralizes the action of the acid of the stomach and delays the formation of the clot. The water should be boiled before adding it to the Milk, especially in the summer. It gets rid of the infusoria in bad water.

Three or four years ago, when I was a resident medical officer at the Children's Hospital in Great Ormond Street, where good cow's milk could always be procured, and where it was given with care and discretion, Condensed Milk formed nevertheless a valuable article of diet, and was and probably is still used in all the medical wards; but among the poor in their own homes, where common milk is often bad throughout the year, Condensed Milk is simply an inestimable boon. —From *The Lancet*, June 23, 1883.

CONDENSED MILK FOR CULINARY PURPOSES.

Use Condensed Milk for every kind of pudding and pastry—it saves sugar bills.

Use Condensed Milk in coffee, for ice cream, for milk punch and for every purpose requiring both milk and sugar.

Anglo-Swiss Condensed Milk Co.,

82 Hudson St., New York.

BUSINESS NOTES.

HORSFORD'S ACID PHOSPHATE.

A healthful tonic Used in place of lemons or lime juice, it will harmonize with such stimulants as are necessary to take. Dr. Jason Walker, Minot, Me, says: "I have used it with very pleasing results. I have prescribed it for nervous exhaustion; for that state of the nervous system following exposure to sun heat; for wakefulness in cases seeming to be due to nervous debility. Our young man at school had such a feeling of confusion in his head that he had to leave school. I gave Acid Phosphate, and he was soon able to resume study." Dr. E. J. Williamson, St. Louis, Mo., says: "I have tested its qualities in cases of diabetes with marked beneficial results, and am well pleased with the remedial qualities of the preparation." Dr. F. A. Roberts, Waterville, Me., says: "I have found it of great benefit in nervous headache, dyspepsia and neuralgia. I think it is giving great satisfaction where it is thoroughly tried."

LEA & PERRINS' WORCESTERSHIRE SAUCE.

From the Atlantic to the Pacific and from Maine to Texas, in the largest and smallest hotels, in every restaurant of any pretension, on the table of the millionaire as well as on the plank laid across two barrels in the miners' camp one can find this justly celebrated sauce. Its use is now universal in these United States. It has been used for a great many years in Europe as well as in the East. It is the only table sauce that has ever been the pattern to imitate. Its proprietors have had to expend large sums of money to suppress these frauds upon the public, and they have cheerfully and successfully done so. The question what makes the Lea & Perrins' Worcestershire sauce such a universal favorite and why is it the only sauce that counterfeiters have deemed it worth while to attempt to imitate is easily answered. It is because it is a really good article, possessing great merit as a help to appetite and digestion, and its qualities have been honestly and faithfully maintained. Those who once try it always buy it, and those who have once used it use it all the more. The purchase of the innumerable imitation sauces only leads to a diligent search for the original genuine sauce. None of these imitators have ever succeeded in getting a foothold in the market, and so we have another illustration of the fact that an article of real merit alone can maintain itself in the public esteem.

Fine Table Wines

From our Celebrated Orleans Vineyard.

Arpad Haraszthy & Co.

Producers of the

ECLIPSE CHAMPAGNE,

530 Washington St. SAN FRANCISCO.

GENERAL AGENCIES:

NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOSEPH R. PEEBLES' SONS CO., 73 West Fourth Street
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.



She reckons well

who does her housecleaning and washing (or has her servants do this work) with PYLE'S PEARLINE.

Why? Because Pearline makes the largest saving all around; saves half the time; half the labor—more than half the wear. Do you know you don't have to rub the clothes when washed with Pearline? This saves the woman and makes the clothes last longer (besides, they look better). What can be harder on woman's health than bobbing up and down over a wash board? What can be harder on the clothes—anything harder don't exist.

Millions of women know these facts well; it takes many millions of packages of PEARLINE to supply their demands for it. You have only to prove these facts and you'll demand it. The best way is—try it. Costs little and every grocer has it.

Beware Peddlers and some unscrupulous grocers are offering imitations which they claim to be Pearline, or "the same as Pearline." IT'S FALSE – they are not.

171 JAMES PYLE, New York.

A LARGE AND VALUABLE

Cook Book Free



We are enabled to offer our readers a most attractive combination, by which all may obtain a copy of the "Modern Cook Book" absolutely free. This handsome and valuable Cook Book has

320 Pages, Over 1,200 Recipes and Hundreds of Illustrations.

The recipes are the choicest selections from 20,000 that were received from practical housewives living in all parts of the United States, to which were added hundreds of the newest, best and most practical recipes of this progressive age, all of it set in new and large type, and the whole book handsomely illustrated.

IT HAS A BEAUTIFUL, ILLUMINATED COVER.

It is an elegant and admirably arranged volume of recipes for practical, everyday use. Among its points of excellence are the following:

Practical Suggestions to Young Housekeepers, Necessary Kitchen Utensils, Suggestions and Recipes for Soups, Fish, Poultry, Game, Meats, Salads, Sauces, Catsups and Relishes, Breakfast and Tea Dishes, Vegetables, Bread, Biscuit, Pies, Puddings, Cakes, Custards, Desserts, Cookies, Fritters, etc. Also for Preserves, Candies and Beverages; Cookery for the Sick, Bills of Fare for Family Dinners, Holiday Dinners, etc. A Table of Weights and Measures; Chapters on the Various Departments of Household Management and Work.

IT WOULD BE CHEAP AT $1,

As it is the Latest, Best and Most Practical Cook Book Published, More Nearly Meeting the Wants of American Homes than any other.

Any person accepting our offer will receive this paper one year, and also that charming home journal, the Ladies Home Companion, one year, together with the Cook Book, all mailed, postpaid, for less than the regular price of the two papers alone.

The Cook Book is offered absolutely free to induce thousands of our readers to become acquainted with the Ladies Home Companion, the publishers looking to the future for their profit, as they believe you will always want the Ladies Home Companion if you try it one year. Do not lose this opportunity to get the newest and best Cook Book free.

THE LADIES HOME COMPANION is a large and popular 16-page journal, published **twice a month**, and gives information about those things which ladies particularly wish to know, and is mostly written by ladies. **Original or Selected Stories** by eminent authors are found in each issue. A special feature is the variety of departments, each of which is conducted by a special editor. It gives the latest **Fashions**, arranged for practical use; timely hints to **Housekeepers**; cheering and helpful talks with **Mothers**; valuable information for lovers of **Flowers**; a pretty and pleasant page for pretty and pleasant children. All handsomely illustrated. It is not an ultra fashion paper, but a journal for the home circle, full of common-sense ideas and suggestions for home happiness and comfort.

OUR OFFER Send us $1.00 and you will receive **The American Analyst** one year and also the **Ladies Home Companion** one year (24 numbers). And every one accepting this offer will also receive the above Cook Book, postpaid.

This offer is extended to **all** our subscribers. Subscribers whose subscriptions have not expired, or those recently renewed, are privileged to accept this GREAT OFFER, in which case their term of subscription will be extended one year.

Address THE AMERICAN ANALYST, 19 Park Place, New York.

THE N. Y. HAY EXCHANGE BULLETIN.

OFFICIAL REPORT OF THE HAY AND STRAW MARKET AT NEW YORK.

The N. Y. Hay Exchange is located at 601 W. 33d St., corner 11th Avenue.

Only the cards of members of the N. Y. Hay Exchange appear on this page.

RULES FOR GRADING HAY AND STRAW

As Adopted by the N. Y. Hay Exchange.

CHOICE OR PRIME HAY—Shall be pure timothy, properly cured, bright, natural color, sound and well baled. No. 1—Shall be timothy, not more than one-eighth (⅛) mixed with "red top" properly cured, bright natural color, sound and well baled. No. 2—Shall be timothy, not more than one-quarter (¼) mixed with red top and blue grass, properly cured, good color, sound and well baled. No. 3—Shall include all timothy not good enough for No. 2, proportionately mixed with blue grass, red top, and clover, sound and well baled. SHIPPING—Shall include all hay not good enough for other grades, and may be natural meadow, free from wild or bog grass, and must not contain over one-third (⅓) clover, sound and well baled. CLOVER MIXED—Shall include all hay containing not over two-third (⅔) clover, and one-third (⅓) timothy, properly cured, sound, and well baled. CLOVER- Shall be medium grown, properly cured, good color, sound, and well baled. NO GRADE OR REJECTED HAY—Shall include all hay badly cured, musty, stained, or in any way unsound.

No. 1. RYE STRAW—Shall be clean, bright, long Rye, in bundles, sound, well and securely baled. No. 2—Shall be long Rye, in bundles, sound, well and securely baled. SHORT RYE—Shall be clean, not bundled, sound, well and securely baled. OAT STRAW—Shall be clean, bright, sound, well and securely baled.

In the New York market bale-wood is weighed in without tare. In all other markets it is deducted.

These quotations for choice, No. 1 and No. 2 hay are for large bales. 5c. per cwt. less when in perpetual press bales.

The New York quotations are per cwt. At other points, per ton.

NEW YORK, March 9, 1891.

The following are the market prices to-day at New York.

	Large Bales.	Small Bales.
Fancy Hay	65c @	60c @
No. 1	55 @ 60	55 @
No. 2	50 @	50 @
No. 3 and Shipping	45 @	45 @
Clover Mixed	45 @ 50	40 @ 45
Clover	40 @ 45	40 @
Long Rye Straw	80 @ 85	— @
No. 2 "	60 @	
Oat Straw	40 @ 45	
Wheat Straw	40 @ 45	

Receipts week ending March 7, as follows:

Via N. Y. Central	176 cars.
" West Shore	100 "
Other roads by Lighter, 34th Street	25 "
Total	301 cars.

The market has been much stronger this week, and top quotations on all grades of hay have been easily realized.

Receipts have been smaller and have met with steady demand so that stock at various receiving points to-day is quite small.

Rye straw continues in large supply, and is in moderate request at quotations. Arrivals of oat straw have increased, stock is large and prices weaker.

Perpetual hay is in small supply and good demand.

COMMISSION SALESMEN.

NOTICE.

These names are arranged alphabetically.

WM. AFFLECK & CO.,
Commission Merchants in
HAY AND STRAW,
Office No. 5,
N. Y. Hay Exchange Building.

J. ALSDORF,
Commission Dealer in
HAY AND STRAW,
33d Street and 11th Ave.,
NEW YORK.

E. A. DECKER. F. W. TOMPKINS.
DECKER & TOMPKINS,
Commission Merchants in
HAY, STRAW, GRAIN,
Office: 16 New York Hay Exchange Building.

L. S. DILLENBACK. T. O. PECK.
DILLENBACK & PECK,
MAIN OFFICE:
Room 0, N. Y. HAY EXCHANGE, N. Y. City.
STOREHOUSE AND BRANCH OFFICE:
101, 103 and 105 North 5th St.,
and 152 and 154 Berry St.,
Palmer's Dock. Brooklyn, E. D.

EDWIN B. DUSENBERRY,
COMMISSION MERCHANT,
And Wholesale Dealer in
HAY, STRAW AND GRAIN.
No. 1, N. Y. Hay Exchange, New York.

THOS. FONDA & CO.,
Commission Merchants
And Dealers in Hay, Straw, Grain and Country Produce,
13 & 14 N. Y. Hay Exchange Building.

N. A. FULLER,
COMMISSION MERCHANT IN
HAY AND STRAW,
33d Street and 11th Ave.,
NEW YORK.

THEO. P. HUFFMAN & CO.,
COMMISSION MERCHANTS
In Hay, Straw, Grain, Feed, &c.,
648 & 650 West 34th Street,
Bet. 11th & 12th Aves., N. Y.

H. B. Jenkins. F. S. Williams.
JENKINS & WILLIAMS.
COMMISSION MERCHANTS IN
HAY, STRAW AND GRAIN,
HAY EXCHANGE.

OSCAR KENT,
Commission Merchant,
HAY AND STRAW,
Room 20, New York Hay Exchange Building.
Personal attention guaranteed all consignments.

JOHN KERWIN & SON,
DIRECT RECEIVERS OF
HAY, GRAIN and GENERAL PRODUCE
DEPOT AND STOREHOUSES,
Palmer's Dock, Nos. 97 & 99 North Fifth Street,
BROOKLYN, N. Y.
SHIPPING ADDRESS, PALMER'S DOCK, BROOKLYN, N.Y
West Shore R. R., N. Y. C. & H. R. R. R., N. Y. L. E. & W. R. R., Pennsylvania R. R., D. L. & W. R. R., Lehigh Valley R. R., and connections.

W. J. OVEROCKER. PERRY HATCH.
OVEROCKER & HATCH,
Commission Merchants in
HAY, STRAW AND GRAIN.
33d Street & 11th Avenue, New York.
References: West Side Bank, New York City; Exchange Bank, Holly, N. Y.

Gilbert Plowman, NEW YORK. Spencer Billington, FORT HUNTER, N. Y.
PLOWMAN & BILLINGTON
COMMISSION MERCHANTS,
HAY, STRAW, GRAIN, &c.
No. 15 N. Y. Hay Exchange,
33d St. & 11th Ave., NEW YORK.

JAMES ROZELL & SON,
Commission Merchants and Wholesale Dealers in
HAY, STRAW, GRAIN AND COUNTRY PRODUCE.
N. Y. Hay Exchange, New York.

SKINNER, BLOOM & CO.,
Successors to Rogers, Skinner & Co.,
COMMISSION MERCHANTS
And Dealers in
Grain, Flour, Hay, Feed, Meal, &c.,
74 CORTLANDT STREET, - NEW YORK.
Barge GYPSIE, Foot Bridge St., Brooklyn.

H. SLINGERLAND,
Barges MERCHANT and HARVEST QUEEN
Foot of West 11th Street,
HAY AND STRAW.
Also, 33d and 35th Streets, and all Railroad terminals. Special facilities for lighterage free goods.

CHARLES F. SWAN,
Commission Merchant in
HAY, STRAW & GRAIN,
At all the Railroad Terminals
in New York, Brooklyn, Jersey City, &c.
MAIN OFFICE,
108 BROAD ST., NEW YORK.

TITUS, WELLS & WILLETS,
Commission Merchants and Dealers in
HAY AND STRAW,
133 Roosevelt St.,
NEW YORK.

G. E. Van Vorst. James M. Hillery.
VAN VORST & CO.,
COMMISSION MERCHANTS,
HAY, STRAW AND GRAIN
N. Y. Hay Exchange, 33d St., & 11th Ave.
562 & 564 West 34th St., NEW YORK.

NOTICE.

These names are arranged alphabetically.

HOSMER, CRAMPTON & HAMMOND,

NO. 43 COMMERCIAL STREET,

BOSTON.

COMMISSION MERCHANTS,

HAY, STRAW, FLOUR & GRAIN.

E. B. HOSMER, G. W. CRAMPTON, BENJAMIN HAMMOND, A. L. ROBINSON.

BOSTON HAY AND STRAW MARKET.

Hay, choice to fancy in large bales	$13.00 to $14.00
Hay, choice to fancy, perpetual pressed bales	12.00 to 13.00
Hay, fair to good	11.00 to 12.00
Hay, poor to ordinary	8.00 to 10.00
Hay, Clover and Clover mixed	8.00 to 10.00
Hay, swale	8.00 to 9.00
Straw, Rye, good to prime	17.00 to 17.50
Straw, Oat	8.00 to 8.50

BOSTON, March 9th, 1891.

Receipts for the week are 178 cars of Hay and 25 cars of Straw; corresponding week last year, 265 cars of Hay and 21 cars of straw. The receipts of Hay for this week are much smaller than for any week for a long time. The accumulated stocks, although still large, are being slowly reduced; the tone of the market is better on account of the decrease in receipts, but as yet, there is no improvement to note in prices. Rye straw is quiet at quotations. Oat straw very dull; very little demand for it.



H. F. WILSON,
WIRE BALE TIES,
458 WEST 38th STREET, New York.

HAMMOND'S
CELEBRATED
Calumet Oleomargarine

Strictly pure, cheap and healthful.

Ask your grocer for it.

Put up in packages of all sizes, also prints and rolls.

G. H. HAMMOND CO.,
607 to 615 THE ROOKERY,
CHICAGO.

Also offices at Boston, South Omaha, Neb., and Hammond, Ind.

SWIFT'S
CHOICE
Chicago Dressed Beef
AND
MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,
UNION STOCK YARDS,
CHICAGO, ILLS.

PUBLICATIONS OF THE
ANALYST PUBLISHING CO.

THE AMERICAN ANALYST.
Weekly. Every Thursday. $1 per year.

THE ROOFER, TINNER AND SHEET-IRON WORKER.
Monthly. 15th each month, $1 per year.

THE LEATHER MANUFACTURER.
Monthly. 1st each month. $3 per year.

Reliable agents and representatives wanted everywhere on liberal terms. Address

ANALYST PUBLISHING CO.
19 PARK PLACE, NEW YORK.

NATURAL MINERAL PURGATIVE WATER.
From the Springs of
VILLACABRAS.
Prescribed by the Highest Medical Authorities.

Stronger effects than any other under smaller volume. No smell—no repulsive taste—no after-constipation—no gripes. As a daily laxative it can be taken either pure or mixed with milk, tea or broth.

Sold by all Good Druggists.

HARTSHORN'S SELF-ACTING SHADE ROLLERS

NOTICE SCRIPT NAME OF Stewart Hartshorn ON LABEL, AND GET THE GENUINE HARTSHORN



A HIGH-GRADE PIANO

AT A VERY MODERATE PRICE.

NEW DESIGNS. FANCY WOODS.

Terms Easy. + Monthly Instalments.

TWO, THREE AND FOUR PEDALS.

Catalogues, Prices, Terms, Etc., sent to any address.

EVERY PIANO WARRANTED 5 YEARS.

(Mention this Paper.)

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,

HOWARD STREET, BOSTON, MASS.

GOLD MEDAL, PARIS, 1878.



W. BAKER & Co.'s Breakfast Cocoa

from which the excess of oil has been removed,

Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

"BILLET"

are

Carefully Selected French Sardines, Packed in Choicest Olive Oil

AT ALL LEADING GROCERS

BROMO SODA.

Useful in Nervous Headache, Sleeplessness, Excessive Study, Over Brainwork, Nervous Debility, Mania, Etc.

DOSE—A heaping teaspoonful in half a glass of water, to be repeated once after an interval of thirty minutes, if necessary. Each teaspoonful contains 30 grs. BROMIDE SODIUM and 1 gr. CAFFEIN,



SUPPLIED BY ALL DRUGGISTS

Ask for (Bromo-Soda, Warner & Co.) and take no other "Bromo."

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.

MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.

STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

THE ORIGINAL AND GENUINE
(WORCESTERSHIRE SAUCE).



LEA & PERRINS' SAUCE

In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—

Lea & Perrins

Beware of Imitations; see that you get Lea & Perrins'

For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS. NEW YORK.

RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

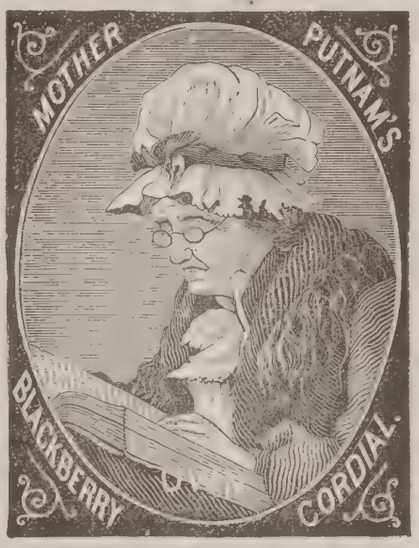
R. W. ROBINSON & SON,
184 Greenwich St., N. Y.

BLAIR'S PILLS.



Great English Remedy for GOUT, RHEUMATISM and KIDNEY COMPLAINTS.
SURE, PROMPT and EFFECTIVE.
Large Box, 34; Small, 14 Pills.
At all Druggists, and
224 WILLIAM STREET, NEW YORK.

Pure LAGER BEER,
"IMPERIAL" and "CULMBACHER"
Brewed & Bottled
SPECIALLY FOR
HOTELS, CLUBS
AND
PRIVATE FAMILIES
BY
Beadleston & Woerz
291 W. 10th St. New York.
Orders by Postal Card promptly attended to.



C-U-R-E-S
DIARRHŒA, DYSENTERY,
MALARIA,
all ailments of the bowels. Is an anti-dyspeptic, and a DELICIOUS INVIGORATIVE. Leading Physicians prescribe it for ADULTS AND CHILDREN. *FOR SALE* by Druggists and dealers.
RHEINSTROM BROS., DISTILLERS OF FINE LIQUEURS,
54, 56, 58, 60, 62 E. 3rd STREET, CINCINNATI, O.

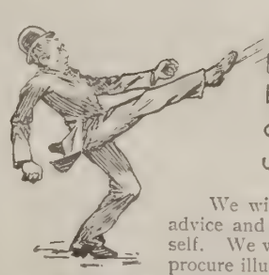


We shall be glad to supply our readers with any periodical published at club rates.

Send us a postal naming periodical and we will quote you prices.

ANALYST PUBLISHING CO.,
19 Park Place,
New York.

Don't kick



because your business is bad, but advertise If you don't know how to, write to us and we will tell you.

We will prepare your advertisement or give you advice and assistance to aid you in preparing it yourself. We will have the advertisement set in type and procure illustrations if any are needed. When a satisfactory advertisement has been produced we will furnish proofs and an electrotyped pattern to be used in duplicating the advertisement if the display or illustration make an electrotype desirable.

Address GEO. P. ROWELL & CO.,
Newspaper Advertising Bureau,
10 Spruce St., N. Y.

DR. PRICE'S CREAM Baking Powder.

Most Perfect Made

A Pure Cream of Tartar Powder—
Superior to every other known.
Used in Millions of Homes—40 Years the Standard.
Delicious Cake and Pastry, Light Flaky Biscuit, Griddle Cakes
Palatable and Wholesome.
No other baking powder does such work.

THE GREAT AMERICAN TEA COMPANY

LADIES GET UP ORDERS.
Entire New Departure.
A HANDSOME PRESENT TO EVERY SUBSCRIBER.
THE GREATEST INDUCEMENTS
EVER KNOWN TO INTRODUCE OUR NEW GOODS.

If you enjoy a cup of **Delicious Tea** send in your orders. 3½ lbs. Fine Tea by mail on receipt of $2 and this "ad". Beautiful premiums given away with $5 orders and upwards. The **most extraordinary bargains** ever offered, during the next thirty days. China Tea Sets and Lamps with $10, $15 and $20 orders to introduce our excellent **New Crop Teas.** Formosa and Amoy, Oolong. Congou. English Breakfast, Japan, Imperial, Young Hyson, Gunpowder, Sun Sun Chop and Mixed. Good mixed teas 20c. per lb. Headquarters in United States for Fine Teas. One pound of our tea will go farther than three pounds of trash. Thirty years' national reputation for selling **Pure Goods Only.**

THE GREAT AMERICAN TEA COMPANY,
P. O. BOX 289. 31 and 33 Vesey Street, New York.

Tabasco Pepper Sauce
OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced, by connoisseurs, to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY,
NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

GLENN'S SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,
C. N. CRITTENTON,
115 FULTON STREET,
NEW YORK.



THE CENTURY DICTIONARY
comes nearer to being a complete catalogue of the English language than any dictionary ever published. But it is not merely a dictionary: it is an encyclopedia of common things as well. It has been ten years in preparation. The leading scholars of the country have contributed to its pages. It is the latest dictionary and it ought to be, and is, the best.

A large descriptive pamphlet containing full-size sample pages, etc., will be mailed to any one sending five 2-cent stamps to
THE CENTURY CO., 33 East 17th St., New York.

Be progressive and keep abreast of the times. Avoid dyspepsia by using **Lard Compound** and **Cottolene,** a substitute for lard.

The highest medical authorities pronounce them healthful; and expert cooks commend them.

Our **Clairette** brand of cotton oil soap is the purest and best laundry soap in the market; as pleasant to the hands as genuine castile.

N. K. FAIRBANK & CO.,
CHICAGO AND ST. LOUIS.



AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 12. NEW YORK, THURSDAY, MARCH 19, 1891. WHOLE No. 212

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - $1 per year.
Single Copies, - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.

Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.

Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,

H. LASSING, M. D., } *Editors.*
T. P. McELRATH, }

No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

A Smart Business Woman 134
Domestic Dietetics 137
Editorials 133
What is Well Enough? Russian Tyranny; Women's Rights; Infant Foods.
French Adulterations 136
Hay Market Official Bulletin 140
Roman Dishes 136
Water and Fire 137
Which is Which? 135

WHAT IS WELL ENOUGH?

The Royal Baking Powder Company seems to have entered upon a new era of unscrupulous and deceptive advertising. The latest emanation is suggestively headed "Let Well Enough Alone." If "well enough" stood for Royal Baking Powder it would be good advice for the public to follow. Aside from this there is in its self-praise and denunciation of competitors not a word of truth in the whole advertisement. It does not require a chemist to ascertain that the Royal Baking Powde contains ammonia. Any housewife can put a little of that much advertised baking powder in the top of the can and place it on top of the stove. After smelling of it let her decide if she wants such an ill-smelling compound to go in the bread and cake she sets before her family. Anything that has an objectionable smell is unfit for human food. No first-class baking powder contains ammonia which is only added to obtain a stronger leavening agent cheaply and of course at the expense of cleanliness. The inuendoes about competitive baking powders containing alum, lime and sulphuric acid are gratuitous falsehoods, as they only apply to the very cheapest and poorest baking powders in market, and no one knows this better than the owners of the Royal Baking Powder. It is dust thrown in the eyes of the public to divert attention from the great Royal ingredient ammonia. The insinuation that all recommendations by grocers and cooking schools are paid for is very amusing as every one knows that the Royal ammonia powder has been put upon the market and kept there in spite of its great ammonia drawback by paid certificates obtained in many questionable ways. To read the Royal advertisements, one would almost believe that the chemists, State, government and otherwise, mostly otherwise, whose names and titles have been paraded before the public as endorsing the Royal Ammonia, generally with a large reservation hole to creep out of, had fallen over each other to give the Royal their approval gratuitously, especially since the public has seen that peculiar exemplification of the old proverb, when the owners of the Royal fell out and were compelled to settle with one another, and the profits of making Royal Ammonia from specially prepared tartar were proven in court to run up in the millions. It seems after all that it would be safer for housewives to take the benefit of the doubt and buy their baking powders from manufacturers who use only ordinary pure cream of tartar without ammonia, and therefore are not able to make such large profits out of a confiding public. It will be safer and better for the health of the community.

RUSSIAN TYRANNY.

One of the possibilities of "paternal government" is shown in the effort now in progress to suppress popular education in Russia. A prominent member of the Imperial family recently declared in a published article that "all popular education is an evil." This opinion has been endorsed with unusual unanimity by official circles in St. Petersburg, especially in consequence of the prevalent conviction that radical, if not revolutionary, ideas are invariably the result of teaching the common people too much. In accordance with these prejudices, the General Governors of Kiew, Volhynia and Podolia issued instructions to the provincial police some eight months ago that all home instruction of children should be subjected to a strict censorship. The remarkable manner in which the censorship was conducted has just been illustrated in the manufacturing city of Uladovka, in Podolia. The Chief of Police proclaimed that from now on all working men were prohibited from instructing their children at all, and, in order that he might test easily the fullness of their obedience to his order, he commanded that the workingmen's children should not be kept in the house, but sent into the streets, where he, in passing, might observe their occupations. This, however, was not enough. He was informed that several Roman Catholic laborers let their children read prayers and taught them how to write. Thereupon he announced that no educational books or tracts should be kept in the house. He made sure of the observance of his new order by having all his men turn in and search every workingman's house in the city. Wherever educational matter was discovered, or children were found studying, a full report of the details of the offence was made, and the books or other educational materials were confiscated. These unprecedented proceedings have been too much for a part even of the gagged Russian press. "Who has given the police the right to confiscate private property thus?' inquires the *Wedjeljad.* "Who has sent them into private houses to make searches? He is unknown to us. The result has been that in Uladovka all education of the young has been abolished, the parents have lost their heads, and the children are in the streets."

WOMEN'S RIGHTS.

The "rights" claimed on behalf of women seem to have encountered considerable opposition lately. On Marth 7, the Methodist Episcopal Conference of Philadelphia by a vote of 120 to 98 decided against admitting women delegates to the electoral and general conferences of that church. In like manner the Maryland Conference of the same church, sitting in Baltimore, defeated the measure providing for women delegates. Furthermore the Kansas Senate has defeated the bill that had passed the House providing for the establishment of a female suffrage in that State. The bill in favor of female suffrage in North Dakota has been defeated in the Legislature of that State. The Wisconsin Senate has approved of a bill which prohibits actresses and singers from publicly appearing in such dresses as the bill declares to be improper. And on March 9, at the monthly meeting of the Presbytery in this city, the General Assembly's proposition in favor of deaconesses in the church was emphatically rejected.

INFANT FOODS.

There has been a mass of writing upon this subject, but a great deal of it seems to have been concocted upon a plan similar to Talleyrand's definition of language—to hide thought. Surely there is nothing of greater importance to the human family than food for infants. Every one knows that in many cases infants are wholly or partly deprived of their natural and best adapted nutriment, mother's milk, and for such a substitute is necessary. What shall it be? The answer to this question seems easier than it really is. The substitute must be readily obtainable, easily prepared, digestible, assimilable and nutritious. No non-professional person can reliably answer these questions. Of course every manufacturer of infant foods claims that the particular food prepared by him is the best and only article that conforms to every requirement of the standard thus set up, and there are not wanting gentle-

men with a long string of title-initials to their names who will establish, to their own satisfaction at least, that the particular products which they were paid to puff is the *ne plus ultra* of infant foods. It goes without saying that none of these foods are as good as natural healthy mother's milk, therefore that product of artificial food which comes nearest to the standard of mother's milk, all other things being equal, is the best. The use of well-known names and high sounding titles does not prove anything. It is not the object of this article to make any invidious distinctions or odious comparisons, but to suggest to some disinterested scientist, who is competent, to institute a series of experiments with the different infant foods now on the market and publish the results without fear or favor, that the public may know how far to have confidence in the advertised virtues of the many different wares advertised.

A SMART BUSINESS WOMAN.

AN ENORMOUS ENTERPRISE CONDUCTED BY A WOMAN.

The American visitor who leaves the boulevards on the North of the Seine to visit Aristide Boucicaut's great creation is liable, unless he is otherwise directed, to select one of the old-fashioned and irregular thoroughfares that lead from the "Institut de France" to the heart of the Latin quarter. Whether he go up the Rue Bonaparte, the Rue de Seine, or the Rue de Saints-Pères, glimpses of old Paris will meet his gaze. The streets are narrow, and the ancient buildings—though more or less Renaissance in style—have a forbidding face that is only enlivened at times by the colored prints in numerous old print-store windows and the welcome signs of the ubiquitous *mastroquet*. After being stared at by sundry fat *concierges*—whose principal occupation in Paris seems to be lounging at their *portecochères*—the visitor, following the dingy pavement, reaches the Rue de Babylone, where a distant view of green trees greets him, from behind which rises a handsome block of new buildings—and he feels at once that he is approaching modern civilization again. That block constitutes the "grands magasins du Bon Marché." One is impressed with the structure from the first, and no wonder, for beside being five stories high, and adorned with divers domes, it covers a superficial area of 12,000 square yards. In this hive of industry are over 3,500 employees, of both sexes, and at no hour of the day does the attendance of customers fall below 2,000, while the average number is fully double that. With these figures before our eyes, we are not surprised that the last yearly returns of money taken over the counter should aggregate the almost fabulous sum of 123,234,523 francs, or little short of $25,000,000! The growth and development of this enormous enterprise is so intimately associated with the careers of Aristide Boucicaut and his wife, that a brief biographical notice of them must necessarily precede any remarks of the present condition of the house. Jacques Aristide Boucicaut was a typical provincial Frenchman—to his dying day he never acquired the Parisian accent—and was born at the commencement of the century in the town of Belème (Orne). The son of a small hatter of modest income, his battle of life began at an early age. He was clerk in a provincial dry-goods store, whence he drifted to Paris—that Mecca of all aspiring provincials. He at once found employment in the house of the "Petit St. Thomas;" but, in 1852, he entered the "Bon Marché," then a comparatively small dry-goods establishment doing business of less than 450,000 francs a year. The proprietor, M. Videau, retired from the direction of affairs in 1858, and five years later Boucicaut (whose energy had increased the annual volume of business to over 7,000,000 francs) bought out the concern on easy terms. Boucicaut was an original genius, and far ahead of his time in his conception of what business methods ought to be. He felt that extraordinary success could only be attained by offering special inducements to the public to buy, and securing the active co-operation of his employees by inducements no less substantial. To the public he offered his goods at the lowest possible prices, and he also adopted the rule of accepting the return of any article that had ceased to please the purchaser, provided the same had not been injured by use. Toward his employees he pursued a most liberal course; he improved their food and lodgings, lessened their hours of labor, and increased their wages, but more than all this, he laid the foundation for the beneficent oligarchical system, by which at the present day, the great majority of the "Bon Marché's" clerks are participants in the profits of the house. The first stone of the magnificent new edifice which was to replace the original building—a miserable construction—was laid on September 9, 1869, and upon its completion in 1872 the establisment entered upon a new era. It was far more than a dry-goods store; it had become an emporium for many articles of necessity and luxury never gathered under a single roof before. To all that is embraced in the term dry-goods were added jewelry, carpets, perfumery, furniture, bric-a-brac, harness, stationery, shoes, toys, and that host of small objects falling under the general term of *Articles de Paris*. In the year 1876, Boucicaut's philanthropic plans for the amelioration of his employees took a practical shape. Together with his son, Anthony Aristide, he founded the "Boucicaut Provident Fund," in the benefits of which every employee having a five-years' uninterrupted attendance in the house was allowed to participate. The fund was sustained by means of a sum annually deducted from the profits of the business, and an idea of its beneficent result may be gained from the fact that on the 1st of August, 1888, it had increased from 62,020 francs to 1,253,746 francs, the beneficiaries being 1,385 in number. Each participant in the fund has an individual account, which is increased by an annual interest of 4 per cent. on the capital. The right to obtain the capital is acquired by all female employees having served for fifteen years, and by all male employees serving twenty years. The fund has paid out since its foundation over 350,000 francs to its various participants or to their heirs. Almost simultaneously with the foundation of the Provident Fund, the owner of the "Bon Marché" organized a daily distribution of milk among the poor families who were overburdened with infant children. This was but one of the many outside charities that distinguished his career, and for which he received a gold medal from the Society for the Encouragement of Benevolence. Aristide Boucicaut breathed his last on the twenty-sixth of December, 1877, leaving the "Bon Marché" in charge of his only son. The latter had been born and bred in Paris, and had led a life not uncommon to the youth of that gay city. Lacking the stamina of his provincial ancestors, he succumbed, in 1879, to an insidious malady, leaving the great work of his father's brain and energy to the care of his no less energetic mother, Mme. Marguerite Guerin Boucicaut. This remarkable woman was born on the third of January, 1816, in the village of Verjux (Saône-et-Loire). The daughter of poor peasants, she came to Paris in her teens, and, while following the vocation of laundress, she met Boucicaut, then clerk at Petit St. Thomas. A short acquaintance sufficed to make the pair man and wife, and henceforth they worked together for the same laudable end. Not long after assuming control of the establishment, Mme. Boucicaut, in order to insure the continuance of the business after her death, incorporated the "Bon Marché" society for the legal limit of thirty years, with a capital of 20,000,000 francs, and opened a reserve fund, which at the close of the fiscal year of 1888, had reached the sum of 21,800,000 francs. Of the 400 shares of the company, she gave up a large portion to her employees on easy terms, and thus it was placed within the reach of even the humblest among them, first to become interested in the amount of business done, next to participate in the profits, and finally to become an actual member of the firm. In order to crown the work of her late husband, Mme. Boucicaut went even further. On the fourth of August, 1886, this good woman formed a "Retiring Pension Fund," and in order that it should in nowise depend upon the beneficiaries—her employees—for support, she endowed it with the sum of 5,000,000 francs out of her private fortune. Every employee with the record of twenty years' service is entitled to a pension, although it is not paid to males before their fiftieth year, nor to women under forty-five. The pension is for life, and varies from 600 to 1,500 francs a year. Mme. Boucicaut died at Cannes, on December 8, 1887. Her will was drawn up in "mystic" form, as the French put it; that is to say, its contents were known only to the testator herself. Of her many subordinates she had forgotten none. According to their length of service they received 1,000, 3,000, 6,000, or 10,000 francs. These bequests alone aggregated nearly 20,000,000 francs. In addition, the deceased left them her property of Fonténay-aux Roses, valued at over a million francs, as a convalescent home. Among her other legacies was the sum of 2,645,000 francs for the founding of three houses of refuge; 1,000,000 francs to the St. Nicholas College of Paris, and 500,000 francs each to the School for the Encouragement of Young Economists and the Preparatory School of the Rue Picpus. She also left large sums to various scientific, artistic, benevolent, and religious societies, and, in short, scattered her colossal fortune with an open hand. As showing her tolerant spirit—very unusual in a French provincial Catholic—it may be said that she bequeathed large amounts to the Protestant, Jewish, and Russian orthodox clergy of Paris. By a special provision of her will, Mme. Boucicaut appointed three of her oldest assistants a council of administration of the firm to conduct the business. Whether one enters the huge building of the "Bon Marché" by the Rue de Sèvres, the Rue du Bac, the Rue Velpeau, or the Rue de Babylone, the effect is equally amazing. Everywhere reigns the greatest animation, eager buyers seizing upon the fascinating bargains that attentive clerks are displaying. Here is a rainbow of colored silks, there are vast spider-webs of lace suspended in air. In this case are alluring devices in leather, in that, an orient of gorgeous fans. Perfect taste is displayed in the general arrangement of goods, and not least attractive are the smiling faces of the saleswomen, in their neat, black costume. An imposing staircase leads from each of the four large entrances to the floors above, where new tempatations beset the unwary. The "Bon Marché" employees never solicit patronage. The habit of "pricing" goods, so common in England and this country, is comparatively new to French vendors. Those women who have not the slightest scruples in monopolizing a salesman's time the best portion of a forenoon, with no other object in view than to satisfy their idle curiosity, are a special object of dislike. Every kind of nationality is represented in the "Bon Marché" at nearly every hour of the day. Indeed, there are moments when French is scarcely heard among the customers. The Anglo-Saxon element predominates, but you also hear a great deal of German, Russian, Hungarian, Italian, Spanish, and even some Asiatic tongues. It is a significant fact that of the hundred or more interpreters nearly nine-tenths are for the English language alone. Very few foreigners besides the English and Americans seem to be ignorant of the language of Molière. If appearances can be relied upon, the employees of the "Bon Marché" form a prosperous and happy community. Rosy cheeks and sparkling eyes seem to be the rule, and their dress is fresh and neat. They have little about them suggestive of the *calicot* (French slang for "counter-jumper"), that most despised of mortals in the centre of French civilization. Every one of the 3,500 employees of the "Bon Marché" is fed within the precincts of the establishment, while 500 of them are lodged there as well. A trip through the "Bon Marché" dining, sleeping, and sitting-rooms, the kitchen and pantry, well repays the visitor. The dining-hall alone is a marvel. It is the longest apartment of its kind in the world. The meals are taken in three

tablees; that is to say, the entire force is divided into three squads who eat in turn, each *tablee* being allowed a full hour; for your Frenchman, whatever else he will submit to, objects to being rushed through his food. And how different are these meals to the wretched nourishment consumed by American clerks at their boarding-houses and cheap restaurants! To begin with, each person receives his half litre of good red wine both at *dejeuner* and dinner. That detail alone signifies four thousand quarts or thereabouts a day; for the truckmen and manual laborers are allowed an extra bottle. By the payment of one or two sous extra, the diner can have his little glass of cognac, kirsch, or anisette. As the working hours are very long, extending from eight in the morning to eight at night, the meals are considered the proper time for relaxation. After terminating their repast, the clerks linger over the fascinating. *petit verre*, discussing politics or playing dominoes. There is an extensive and well-equipped kitchen and a large staff of cooks under the supervision of an experienced *chef*. The employees of the "Bon Marché" enjoy other advantages beside that of being well fed. The worthy founder of the house established free evening classes for vocal and instrumental music, foreign languages and fencing. The most promising students in English are sent to London, at the expense of the house, for six months to perfect themselves. I was present at an assault-at-arms and a musical entertainment, and can bear testimony to the excellence of both performances. Unlike the English "bazaar" stores, the "Bon Marché" only insists upon exercising that close supervision over its employees which is evolved by their living on the premises so long as their salaries make it impossible for them to lodge comfortable elsewhere. Thus, young fellows from the country, who enter the establishment with merely nominal wages, find a temporary home ready prepared for them, which they leave when advancement enables them to provide entirely for themselves. The plan is a still greater boon to the young women who constitute a large percentage of the *internes*, or indoor population of the "Bon Marché." Realizing the temptations that beset their paths in a city like Paris, Mme. Boucicaut devoted motherly attention to them. She set aside comfortable apartments for them in a new building belonging to her in the Rue de Babylone, in which every inmate was given a large, square room to herself and the use of a handsome salon, or sitting-room. Monthly entertainments would be given and receptions held, and, in fact, everything done to make life agreeable. There is nothing of the barracks about the Boucicaut premises, and the polished oaken floors, prettily draped windows, and ornamented mantels impart a home-like air. The salon above-mentioned is furnished in plush, and contains oil portraits and marble busts of Aristide Boucicaut and wife. The girls have unrestricted access to the apartment, and scarcely an evening passes that they do not congregate there to enjoy the excellent piano and each other's society. The handsome and capacious stables of the "Bon Marché" lodge two hundred horses. The architecture is modeled after that of the Duc d'Aumale's stables at Chantilly, and is most imposing, with its Grecian columns, iron-work wrought into many artistic forms, and marble slabs and wainscoting of variegated hues. In the adjoining court-yard stand eighty vans, which daily deliver goods within a circuit of fifteen miles. I have referred to the council of administration, or board of directors, in whose hands repose the destinies of the vast establishment. This board is seconded by fourteen so-called *administrateurs*. The two bodies meet regularly three times a week under the presidency of M. Plassard, to discuss the interests of the house. There are, further, forty-seven buyers—with as many seconds, or substitutes—who meet about once a month for the purpose of submitting suggestions or complaints. The control of discipline and general supervision during working hours is vested in nine inspectors and twenty-four floor-walkers. Insubordination and especially acts of discourtesy towards customers are immediately reported and acted upon. Compared with salaries in America, French clerks are, as a general thing, underpaid; nevertheless, I was told that few of the "Bon Marché" employees make less than 2,400 francs a year in addition to their board, and many of the ordinary salesmen received as high as 5,000 and 6,000 francs. The buyers, on the other hand, were enabled to make all the way from 12,000 to 40,000 francs a year. As to the *administrateurs*, some of them are wealthy men, while the three chiefs of the establishment can be squarely set down as millionaires. The routine business of the store seems to run smoothly, but I think it would be expedited by the introduction of the American automatic cash "yanker." The "Bon Marché" has a tedious system by which every customer is obliged to wait until the salesman has delivered the money in person at the desk and registered the purchase. Among other features, the free art gallery deserves notice. Its contributors are allowed to pocket the entire proceeds of any sales they may effect without the payment of one sou to the house for commission. Then there is the daily charity to the poor of the neighborhood, who assemble, from eight to nine o'clock in the morning, at one of the side entrances and carry away sufficient food for themselves and their families. Nor should the splendid reading-room in the centre of the building, affording unlimited gratuitous convenience to the customers, be forgotten; and last, but not least, the "free lunch"—that glorious American institution, with a complete wine and liqueur list.

(*Argonaut.*)—V. GRIBAYEDOFF.

WHICH IS WHICH?

THE STATUS OF THE MALT EXTRACT CONTROVERSY.

For a number of years there has been sold in the United States a so-called malt extract under the name of "Hoff's." It was said to be made in Germany, and was claimed to be a non-alcoholic extract of barley-malt free from all preservatives or adulterations, and was largely advertised both to the medical profession and the public as a tonic of great virtue. Physicians were besieged with samples, and importuned to recommend it to their patients. Many yielded to these requests, and the consequence was a considerable sale for the product to the profit of the seller. Very soon there appeared in the medical and pharmaceutical press the advertisements of two rival houses, both claiming to be the "Original Jacobs," and attacking each other, impugning the genuineness and quality of the article manufactured by the opposition concern. It would puzzle a judicial mind to decide who was right, and it is quite possible that both were right or wrong; and if, like the Kilkenny cats, they had annihilated each other, the public probably would never have missed either. So much was admitted that the heads of the two antagonistic manufacturing firms were uncle and nephew, who had formerly been in business together. After they separated the uncle asserted that the nephew did not know the secret of manufacture, while the nephew as gravely insisted that the uncle never knew anything about the business. The battle-ground appears to have been in the United States, for, on the principle that a prophet has no honor in his own country, no one in Germany seemed to care anything about Hoff's Malt Extract, but here in the United States were two houses advertising and selling this stuff, and they immediately proceeded to attack one another. One said that the other made the stuff on this side and never imported any, while the other gravely charged that the stuff imported by the opposition was bogus anyway. Next they got into the courts and then the fur began to fly, and it was a big wash-day for dirty linen. After a while the decisions of the various courts *pro* and *con* were advertised, and here is where the real fun comes in. One house asserts that the German courts had found the opposition house guilty of publishing a false court decision, uttering a false affidavit and had fined them about $1,500, and that the opposition concern, feeling that they were beaten, had withdrawn an appeal made in the American courts from an adverse decision on an application for an injunction to restrain their competitors from selling the stuff under any similar name to their own. The opposition house also appeals to the profession and drug trade in an advertisement, and, strange to say, do not deny any of the damaging assertions of their enemies, but in a manner most amusing claim that their competitors, having but slightly changed their label, they have won a substantial victory, and therefore having accomplished all they could, have withdrawn their appeal from a decision, which denied their right to the very thing they wanted, and which they now claim their competitors have granted them voluntarily. The lame excuse that the manufacturer of their competitor's importation is not in reach of our courts prevents their establishing their own rights to a commercial trade-mark seems ridiculous, when it is remembered that the common law of trade-marks protects the consumer against being imposed upon by an article different from what he wants under a closely simulating title or label. If either one of these contending houses have an exclusive right to the title of Hoff's Malt Extract, or any title like it, the courts here will protect them, but the law demands that they shall be able to come into court with "clean hands." Can they? Aye, there's the rub. Until this is judicially settled it will be just as well for physicians and public to give these extracts a wide berth, employing some of the many other tonics on the market. It seems that neither house at present can give a clear, intelligible statement of the case. There is a skeleton hidden somewhere in the closets of one or both, and the outside public may as well wait until it is brought forth.

ALUMINUM.—A cubic foot of aluminum weighs 157 pounds. A cubic foot of copper weighs 558 pounds. A sheet of aluminum, 12 inches square and one inch thick, weighs 14 pounds. A bar of aluminum, one inch square and 12 inches thick, will weigh 1.17 pounds. A cubic inch of cast aluminum weighs 0.092.

LIBERTY.—"What is that figure on the dome?" inquired a female visitor of a Capitol guide. "Liberty, ma'am," he replied. "Liberty?" she repeated, with questionable scorn; "and it is a woman." "Yes'm," he responded, humbly; "but she ain't married, ma'am. Leastwise, her husband ain't never around."

NEEDED EXERCISE.—Doctor: "You do appear to be in a bad way; that's a fact. What's your business?" Patient: "I am one of the city laborers." Doctor: "It is as I feared. What you require, my man, is exercise."

FOLLOWING DIRECTIONS.—"It's pretty damp for a person with rheumatism to be prowling about, Uncle Josh." "Mebby, boss; but it's der doctor's advice." "Do you mean to tell me the doctor advised you to be out nights?" "Not 'zackly dat away; but he said I must have chicken brof."—*Life.*

SWISS SABBATHS.—In Switzerland a Sunday law has been enacted, applying to all railroad, steamboat and tramway companies and post-offices. Working time must not be more than twelve hours a day, even on occasions of increased traffic. Engine and train men must have at least ten hours' unbroken rest, and other employees nine hours. They must also have fifty-two days off yearly, and seventeen of these must be Sundays. No reduction in wages is to be made for such rest days. All freight traffic on Sunday is prohibited, except live stock.

TO PROTECT NEW YORK.—The government has recently commenced the work of locating batteries at Sandy Hook, to take the place of the old fort at that point, begun in 1858. Between that date and 1867 it is said over $1,000,000 were expended on this fort, which was to have been one of the most formidable in the world, but has become obsolete by the vast development which has taken place in modern heavy ordnance. The new batteries are designed to have twelve-inch guns and sixteen-inch mortars, with a range of from nine to twelve miles.

FRENCH ADULTERATIONS.

THE VARIOUS INGREDIENTS THAT ENTER INTO SO-CALLED OLIVE OIL.

Consul W. H. Brady, of Nice, reports on this subject as follows: "Much of the olive oil exported from France is adulterated with different seed and nut oils At least seven or eight of the seed products are so employed. When our fellow-citizens imagine that they are eating their salads with olive oil, it is most possible that at least a portion of the oil eaten is either cotton-seed, ground-nut (*Arachis hypogæa*), sesamum, poppy, camelina, rape, or flaxseed oil. The French farmer and the agricultural stations are doing what they can to remedy this, as growers of the olive are being seriously injured by these cheap mixtures, just as our dairy farmers were hurt by manufactured imitations of butter: but they can do little without the assistance of the buyers. It is quite possible to obtain the pure article now by co-operating with agricultural stations at shipping points, say Nice, Marseilles, and Bordeaux. Here at Nice, M. R. Brullé, director of the agricultural station, writes me that if buyers will make it a condition of their orders that samples of the oil to be shipped be placed at the disposal of the consul or director of the station by the oil merchant for analysis, he will analyze it and pronounce upon its purity, giving a certificate of the same to the merchant shipper. On receipt of the consignment the buyer, if he wishes, can repeat the examination by a comparatively simple process recently discovered by M. Brullé. If oil has not been sent according to sample furnished, the shipper will be liable to a criminal action. The fear of this would be a strong reason for honesty. It is to be hoped that the importers will accept M. Brullé's offer to compel the shipment of unadulterated oil, as I am informed that some of the compounds are quite injurious to health."

ROMAN DISHES.

ELEGANT TASTES SULLIED BY BARBARIC GROSSNESS.

Some one has said somewhere that the Romans, with all their splendid civilization, bequeathed to us but two priceless and enduring legacies—their laws and their cookery. Through both we have been moulded, but subtle as has been the influence of the Roman law, it pales before the significance of the Roman cuisine in shaping modern character, in forming the modern mind through the stomach. Plagiarists and gross imitators in the field of religion, literature and art, as the Romans undoubtedly were, they were splendid cooks. Much of their original thought found expression in the art and invention of the kitchen, and its influence is present to-day in our soups and salads, in our sausages and entrees. The authority of Apicius, the Roman epicure, has been no less potent than that of Justinian, the lawgiver. We are accustomed to conceive the Roman dinners as visions, forever departed, of gorgeous revelry and splendor, of delicate ease and refinement, enhanced by all the graces and seductions which charm the palate and the senses. Historians of the ancient world have told us so from time out of mind. When we read of the feasts of Greece, of Egypt, and particularly of Rome under the magnificent sway of Augustus and his imperial successors, the story is the same, be the scenes in the home of a private gentleman or in the palace of a dignitary of State. There are the same beautiful mosaic pavements, the carved fountains with jets of perfumed waters, rich bronzes, statues and gleaming candelabra, all the luxurious surroundings of wealth and ease. Finely sculptured images of ivory and silver, costly embroideries, couches quilted in rich-hued fabrics, the sweet odors of myrrh and frankincense—on every side, is an artful element designed to charm the senses. Viands of fabulous value, wines of untold age, cooks without peers or successors—these are the stories of the Roman dinners. But history very often neglects to tell us that the Senators of unbending dignity, the private citizens of traditional refinement, ate with their fingers and indulged in, during dinner, sufficient cleansing to constitute an ordinary bath. From under the splendid canopies there was noisome smoke no less than the strains of sweet music. The Roman dinner was of barbaric grossness. Intermingled with its pleasures were trying discomforts. Associated with palatable dainties were gastronomic outrages that would repel the modern epicure, disturb his temper, and offend his taste. An Augustan supper was often consumed hastily; it was always a gross and fantastic enjoyment. The Romans were voluptaries incapable of experiencing the finer delights of the table. They were gluttons, never epicures. The strongest appeal of the Roman cook was to the fancy, not to the palate. His ideas, which found expression in his cookery, were grotesque, even repulsive. He appealed to an appetite of cruel fancy, to one like that of the Roman sensualist, who could not relish a lamprey unless he imagined it to have been fattened on human flesh. He appealed to ostentatious extravagance. He peppered his master's drink with powdered pearls. He paid what would be equivalent to $5,000 of our money for a pie made from birds whose singing was supposed to immitate human voices. A dinner in the chamber of Apollo to which Lucullus invited Cicero and Pompey, cost 75,000 sesterces, or about $3,000. Precious stones were ingredients in many dishes. There were salmagundis made of the tongues of nightingales and the brains of birds of gay plumage. The goose, peacock, flamingo, and the parrot were esteemed as extremely delicious. But, with all the boasted art and perfection of the Roman cuisine, the ancient masters of the world had no sugar, no butter, no bread, as we understand the words. The ancient peoples of the south, as a whole, were without these primary elements of food, the substantial basis upon which the fanciful superstructure of the well-ordered table is built. Butter—the greasy substance which enters so minutely into most of the delicacies which please our palate—was to the ancient Greeks and Romans a thing of curiosity rather than of service. Its use for any dietic purpose was confined to a few old races neither under the influences of southern climate nor of Occidental customs. The Israelites were almost completely ignorant of its uses. The Romans, with their taste for oil, disdained the use of butter at their table with contempt. They knew of that kind only which was badly made. The curious character of their cooking precluded, in large measure, its necessity, but they went into sensual ecstatics over compounds which would nauseate a Hottentot. Poor butter with them made excellent medicinal service and none other. As did the Greeks, they learned of its character from the savages and uncouth tribes of the North, especially from Germany, where the rigors of climate stimulated its manufacture. In all the southern countries of the ancient world oil served the purpose of butter. It was one of the most constantly used elements in the kitchen—to our notions, one of the most abused. Another of our seeming necessities of life, sugar, was unknown to the ancients. Honey was its single substitute, and in most remarkable combinations and under strange conditions was it used. Upon meats, stewed, fried, boiled and baked it was poured. With wine, gum and spice it made the initiatory whet to appetite at the regular meal. Its purposes and relations were evidently but poorly known, and it was outrageously used. In describing a Pompeiian supper, Bulwer Lytton delicately characterizes that famous appettizer as diluted wine sparingly mixed with honey. He forgot the mucilage and spice. The Romans necessarily were ignorant of the subtler excellencies of fermented grapes. Wine was their constant and best loved drink, but it was like themselves, gross. Oysters and honey in conjunction, will, under average circumstances, make a modern epicure shudder. They were esteemed a delicacy by the Romans, who increased the flavor by the introduction of pepper and vinegar. Sweet and sour in constant contact was but one of the anomalies of Roman cooking. We know of the leavened and unleavened bread of the Israelites, of the loaves of corn bread given by the Roman Senate in times of popular distress. When we hear of bread in the annals of the Roman State it is in connection with plebeians and their riots and clamors. History tells us of the Senatorial regulation of quantity in those public bread distributions of old. In some measure also it details the character of food then given to the Roman poor. The excavations at Pompeii have laid bare to the modern world the entire interior of a Roman bakery. There, in full view, are its ovens, its great open fire-place, its kneading troughs, its primitive flour mills, its bread somewhat well done, after the baking of centuries. Upon each loaf is stamped the name of the maker or the sign of the shop. We know the size of the loaves, great and small, but both in the eyes of a dyspeptic would be intolerably heavy. Bread, in our sense of the term, light, wholesome, palatable, was unknown to the ancients. Coarsely ground grains, wheat or corn, leavened by an inadequate process, were the substitutes which the poor of Rome were compelled to accept, which the rich very seldom used. Nor for centuries after was there much improvement. Not until the reign of Elizabeth, the Virgin Queen, did bread assume its important position in the eyes of men. Frumenty, wheat boiled in milk, took largely the place of bread in the cuisine of the refined Romans. It was a constituent of most foods, but like all the elements of a Roman dish, suffered a transformation which completely disguised it in the final stage, when it was presented to the consideration of the imperial epicures. Thin biscuit, like wafers, sometimes broken into tiny fragments, tickled the palates of Roman gentlemen. Bulwer Lytton has given us quite an inadequate conception of a Roman dinner. He detailed its sensual pleasures, its strong appeal to refined sense, but he neglected to outline its gastronomic agonies. Pork was the passion of the Roman epicures, the spit, gridiron, frypan, oven, boiler and stewpan were utilized for its preparation. Imagine the delicacy or flavor of a baked pig, stuffed with thrushes, beccaficos, dates, onions, snails, mallows, beets, leeks, celery, cabbage, corriander seeds, pepper, pine nuts, eggs and garum. Down the back of the porker a great opening was made, and into it was poured a mixture of bitter rue, sweet wine, honey and oil, thickened with frumenty. That was a dish which would throw a Roman into ecstasy. He was a devotee of sauces and seasonings. He had many condiments, but garum was his favorite. He obtained it from the intestines, gills and blood of fishes, large and small, which were stirred together with salt, and exposed to the sun until fermented. Wine and spice herbs were added. It was strained and poured liberally on flesh, fish, game and fowl. Inferior kinds were prepared for the poor. It was prized above all other sauces. No thought of its repulsive, nauseating ingredients entered the minds of fastidious epicures. It gave piquancy to barbaric messes of fifty incongruous elements, in which sweet and sour, hot and cold, saline and mucilaginous compounds entered, with alarming disregard of subsequent consequences. The Romans could relish what was offensive, but they revolted against what was tough. With pestle, mortar and knife the Roman chef chopped, diced, and dissected infinitesimally until meats and vegetables were pounded to a delicate pulp. Haggis, as the Scotch call it, was a favorite preparation. It was boiled pig's stomach, filled with fry and brain, raw eggs and pineapple beaten into a pulp, and flavored with the never absent garum. Asafœtida was no inconsiderable element in the flavoring of foods. These were extraordinary mixtures of oil and wine, honey, pepper and the disgusting distillation from fish. There was frumenty in broths, stews, and hotch-potches. There was an extravagant love for unpalatable birds of fine plumage, for roasted lobsters, for sweetened oysters. A favorite pastry was a mixture

of rose leaves, well-beaten, brain and eggs, mingled with garum, pepper and wine, all lightly fried. There were also delicious figs, fresh herbs, anchovies, fruits, nuts, sweetmeats, tarts, and confectionary in fantastic fabric. The Romans had many elements of food, which to our sense are disgusting and nauseating; they esteemed as delicacies those which we feel offend the taste to the last degree. Yet they were courteous, luxurious in judgment and desires, honorable in their relations. Not the least significant in the banquet-room of the Romans were those festoons of roses which dropped over the gorgeously frescoed ceilings. Very seldom was the spirit it symbolized violated. No guest would betray the indiscreet words spoken "under the rose."

DOMESTIC DIETETICS.

SPECIALLY PREPARED FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

March.

MEAT.—Beef, mutton, ham, kidneys, liver, venison, sausage, veal.

GAME AND POULTRY.—Grouse, hare, pigeon, chicken, duck, turkey, goose, snipe.

FISH.—Bass, cod, eels, carp, catfish, flounders, halibut, herring, lobsters, mackerel, mussels, oysters, perch, pike, rock-fish, salmon, smelt, white-fish, trout.

VEGETABLES.—Artichokes, beans, carrots, celery, garlic, lettuce, onions, parsley, parsnips, potatoes, shallots, spinach, turnips, watercress.

FRUITS.—Apples, bananas, oranges.

PRACTICAL RECIPES.

CLAM CHOWDER.—For ten people, allow 100 soft shell clams, two dozen small potatoes, four onions, one-half pound salt pork, a cupful of milk, about four tablespoonfuls of flour, salt and pepper. Separate the soft part of the clam from the hard and chop the latter very fine; chop fine the pork and onions, peel the potatoes and cut them into slices, mix the flour and milk for thickening. Put a soup kettle over a good fire, and when it is hot put in the chopped pork; put the onions on top and cover the pot, and let them cook together for a while; put in the potatoes, and then nearly fill the pot with hot water; when the potatoes are almost done, add the clams—the soft parts and the chopped ones; season; cook for a few moments; then add the thickening. If the chowder seems very thick, do not use all the flour and milk; if not thick enough, use more. Be sure and put in enough salt to make it tasty.

SWEET PICKLES.—Take one pint of cucumber pickles, and, if they are large, split and slice them; if they are small, let them remain whole. Put a mixture of half vinegar and half water, sufficient to cover the pickles, in a kettle, with a cupful of granulated sugar, a teaspoonful of whole cloves and one of allspice. When this boils, put in the pickles, and let them stew until they are a dark green color; then try them, and, if very tender and sweet enough, take them from the fire and put away for use; if not sweet enough, add more sugar, and cook longer. These are very easily prepared and are very nice.

RAISIN CAKE.—One cupful of butter, rubbed to a cream, with two cupfuls of powdered sugar. Beat up separately the yolks of five and whites of four eggs, and to the yolks add one cupful of milk, and pour it into the butter and sugar; now add the juice and grated rind of half an orange and half a lemon, and quarter of a teaspoon of salt; put in two cupfuls of flour and one-half cup of corn starch, sifted together, with two teaspoonfuls of baking powder; beat well, and put in one cupful of stoned raisins and, lastly, the beaten whites; bake in one large, square cake, or two small ones, and when done cover with an icing made of the extra whites and flavored with rose water.

COCOANUT PIE.—One pint of sweet milk, two eggs, the grated rind of an orange, one cupful of grated fresh cocoanut, a little nutmeg, and sugar enough to sweeten. Line a pie plate with good crust, put in the above mixture and bake in a good oven until the custard is set; then take out, cover with grated cocoanut, and serve cold.

SCALLOPED LIVER.—Boil some calf's liver until about half done; then cut into small, even sized pieces. Stew a few small onions in a little water, with pepper and salt, until they are done; then put in the liver, and let it cook slowly. When done, season and thicken the gravy, and serve.

PRESERVE RISSOLES.—Roll out some pie crust quite thin, and cut it into almost square pieces, rather wider than they are long; in the centre of each put a good tablespoonful of jam or other sweetmeats; fold over the edges and pinch them well together; then lay in a pan and bake a fine brown.

WATER AND FIRE.

WHAT IS REQUIRED TO QUENCH FLAMES.

A recent article in London *Engineering* gives some elaborate calculations about the quantity of water required to extinguish fires. The quantity of heat evolved in the combustion of wood is sufficient to evaporate 6.43 pounds of water, and this is the minimum quantity of water with which it is possible to extinguish a pound of burning wood. In actual practice the proportion of water is far in excess of this amount. In fact, it is well known that it is practically impossible to extinguish a fire in a building when the frame itself becomes ignited. The floors of mills and warehouses, when made of timber, weigh about 25 pounds to the square foot. They, therefore, contain, a sufficient amount of combustible material in every square foot to evaporate 160 pounds of water, or enough to cover the floor to a depth of two feet seven inches. During the great fire in Lynn, Mass., in November, 1889, which burned over an area of about forty acres, enough water was thrown upon the burning buildings to have covered the entire forty acres to a depth of seven feet. Two days later a great fire swept away some of Boston's finest commercial buildings, and enough water was thrown upon the flames to flood the burned area, streets included, seven feet deep. A fire in the picker room of a cotton mill was extinguished by automatic sprinklers, fed from a tank which had just been filled, and as it was only partially emptied it was possible to measure closely the quantity of water required to extinguish the fire. It was found that 107¾ pounds of water had been used for each pound of cotton burned. This was considered a small quantity, as the fire was very quickly extinguished.

HOUSE-CLEANING AND HOUSE-CLEANERS.

In every well-regulated household, certain times of the year are set aside for house-cleaning. When properly done, every rug, carpet, matting and oil-cloth is taken up and the floors and wainscoating scrubbed, sanded and disinfected. Every woven tissue is shaken and beaten; every wall and ceiling cleaned, revarnished, repainted or whitewashed; every closet, cupboard and pantry washed and purified, and every article of furniture freed from dirt or renovated. The true object of this varied and unpleasant operation is not so much cleanliness as it is health. Dirt is of course objectionable *per se*. It is doubly repugnant because it harbors vermin, microbes and the other dangerous forms of microscopic life, and acts as a breeding-ground for, if not all, nearly all of the maladies known as germ-diseases. House-cleaning when rightly done takes place at the beginning of each different season. In temperate climes, the early spring and early autumn are the favorite seasons, as scientifically they are the best. In warmer latitudes, the opening of spring, summer, fall, and winter are justly set apart for the process. The body is the house every one lives in. It is a million times more complex than the greatest architectural structure ever created, and it deserves and requires infinitely more care and thoughtful treatment. The laws of successful house-cleaning apply to it with perfect accuracy and completeness. Washing is a necessity as well as a comfort to one as to the other. To obtain the best results warm water, a dash of ammonia, and good rubbing with the hands should be the daily rule. In cleaning the head, do not use soap or alkali more than once a week. An excess removes the oil from the glands of the scalp and produces dandruff, raw surfaces and even baldness. The beating and shaking of woven fabrics may be compared to healthful exercise which is a necessity to one and all. The airing of rooms and the letting in of sunlight applies with equal force to our members. A sun bath is needful for health, almost as much as is pure, fresh air. But all this refers to the exterior of the body, and not to what is a hundred-fold more important, the interior. To cleanse this requires wisdom and prudence. The dirt here cannot be swept or brushed away. It must be washed away by the methods Nature has supplied. The simplest is the use of aqueous vegetables and acid fruits. These are easily digested and nutritious and, to a certain extent, have medicinal virtues. The tomato, onion and carrot are especially valuable in this regard. Tea, coffee and chocolate are all good, particularly when dilute. When very strong, tea and coffee are to be avoided. If you must drink alcoholic stimulants, use light wines, cider and perry. Malt liquors are bad for the kidneys, and distilled spirits bad for every part of the human economy. Above all, the blood must be kept free from all humors and impurities. These are the underlying source of nearly all diseases, no matter what their nature. To remove these effete matters thoroughly, as well to invigorate and improve the great vital functions is best accomplished by using Ayer's Sarsaparilla. There are other blood-purifiers of value, and many are of the greatest benefit in special cases. But no other medicine known to science will both purify the blood and restore the physical processes to their natural vigor and activity. It should be considered rather as a preventative of all disease than as a remedy for any particular symptoms. Because by dispelling or expelling the gradually accumulated humors in the circulation as well as in the fine tissues of the organization, it takes away the tendency toward any congenital or constitutional weakness or ailment, and at the same time strengthens that which is weak and stimulates that which is morbid or undeveloped. When used and properly used, Ayer's Sarsaparilla is the greatest aid in the house-cleaning of the body, and the greatest friend to health and strength that is known.

ORIGIN OF CLAM CHOWDER.—I am frequently asked "What is clam chowder?" and I have replied that more than thirty years ago I heard the poet Longfellow urge a French lady to eat some clam chowder because it was French. The lady looked up in astonishment and uttered a most significant *Comment donc!* Unto this Longfellow replied that the French originally settled on the borders of New England, and Mother Necessity soon taught them how to stew clams and fish in layers with bacon, sea biscuit (crackers), and other ingredients in a kettle (*chaudière*). Now, from the French the Indians learned the Roman Catholic religion, and a little of the French language and a great deal of the dish which the new-comers had invented. The Indians were not apt in the pronunciation or in the significance of French, and when they heard the Gaul speak of the *chaudière* the Indian supposed it referred to the food, and his nearest approach to the pronunciation was chawder—the name which early English fishermen and settlers learned from the Indian, and which the Anglo-Saxon in the New World further corrupted into chowder.—Correspondence *American Register*.

Indigestion

Horsford's Acid Phosphate.

A preparation of phosphoric acid and the phosphates required for perfect digestion. It promotes digestion without injury, and thereby relieves those diseases arising from a disordered stomach.

Dr. E. J. WILLIAMSON, St. Louis, Mo., says: "Marked beneficial results in imperfect digestion."

Dr. W. W. SCOFIELD, Dalton, Mass., says: "It promotes digestion and overcomes acid stomach."

Dr. F. G. McGAVOCK, McGavock, Ark., says: "It acts beneficially in obstinate indigestion."

Descriptive pamphlet free.

RUMFORD CHEMICAL WORKS,

PROVIDENCE, R. I.

BEWARE OF SUBSTITUTES AND IMITATIONS.

Caution:—Be sure the word "Horsford's" is *printed* on the label. All others are spurious. Never sold in bulk.

BUSINESS NOTES.

BLACKBERRY CORDIAL.

What reminiscenses the old-fashioned term, blackberry cordial, brings to our mind, and when the suggestive words, Mother Putnam's are added, it needs not the motherly, benevolent face of that good old lady as depicted in Messrs. Rheinstrom Brothers' advertisement, to convince us that the same good old cordial which helped us out of many infantile attacks of pain and illness is still to be found. An article may be called blackberry cordial, and not contain a particle of blackberry, but consist of a vile compound of cheap extracts and atrocious spirits. Such, however, is not the case with Mother Putnam's Blackberry Cordial as manufactured by Rheinstrom Brothers. It is composed of the best and purest ingredients, every one of which is specially prepared and carefully tested by competent pharmacists, and the result is that all who have ever bought it will buy no other.

WM. R. WARNER & CO.

For the benefit of our medical readers we wish to say that Wm. R. Warner & Co., of Philadelphia and New York, have now a very extensive assortment of compressed tablets of some of the most useful drugs in common use. For practitioners who carry their own medicaments in cities for night use, and in the country for general use, these compressed tablets are exceedingly useful. They are prepared with the greatest care, and the well-known reputation of the house is the best guaranty of the quality and quantity of their contents. The prices are lower than the same medicines can be bought for in the usual and far less convenient form. Of their specialties, such as Bromo Soda, Licorice Lozenges, Soda-mints and Chlorate of Potash we need not speak, they are too well known. Physicians should send for their lists.

CLEVELAND'S SUPERIOR Baking Powder.

The Official Reports of the
United States Government, 1889,
Canadian Government, 1889,
New Jersey Commission, 1889,
Ohio Food Commission, 1887,
prove that Cleveland's is

THE STRONGEST

of all the pure* cream of tartar baking powders.

*Ammonia or alum powders, whatever their strength, should be avoided as injurious.

25 CTS PISO'S CURE FOR CURES WHERE ALL ELSE FAILS. Best Cough Syrup. Tastes good. Use in time. Sold by druggists. CONSUMPTION 25 CTS

Buffalo Lithia Water, Spring No. 2, in Bright's Disease, Gout, Stone in the Bladder, and Diseases Generally of Uric Acid Diathesis, Etc., Etc.

DR. WM. A. HAMMOND, of Washington, D. C., Surgeon General U. S. Army (retired), Professor of Diseases of the Mind and Nervous System in the University of New York, etc.

"I have for some time made use of the BUFFALO LITHIA WATER in cases of AFFECTIONS of the NERVOUS SYSTEM complicated with BRIGHT'S DISEASE OF THE KIDNEYS or with a GOUTY DIATHESIS. *The results have been eminently satisfactory.* Lithia has for many years *been a favorite with me in like cases, but the* BUFFALO WATER CERTAINLY ACTS BETTER THAN ANY EXTEMPORANEOUS SOLUTION of THE LITHIA SALTS, and is, moreover, better borne by the stomach. I also often prescribe it in those cases of CEREBRAL HYPERÆMIA resulting from OVER MENTAL WORK—in which the condition called NERVOUS DYSPEPSIA exists—*and generally with* MARKED BENEFIT."

DR. WM. B. TOWLES, Professor of Anatomy and Materia Medica, in the Medical Department of the University of Virginia.

"BUFFALO LITHIA SPRINGS, No. 2, belongs to the ALKALINE or, *perhaps, to the* ALKALINE SALINE Class, *for it has proved far more efficacious in many diseased conditions than any of the simple* ALKALINE waters.

"*I feel no hesitancy whatever in saying that in* GOUT, RHEUMATIC GOUT, RHEUMATISM, STONE *in the* BLADDER, and in all diseases of URIC ACID DIATHESIS, *I know of no remedy at all comparable to it.*

"*Its effects are marked in causing a disappearance of* ALBUMEN *from the urine. In a* single case of BRIGHT'S DISEASE *of the* KIDNEYS, I witnessed *decided beneficial results from its use, and from its action in this case I should have great confidence in it as a remedy in certain stages of this disease.* In DYSPEPSIA, especially that form of it in which there *is an excessive precaution of* ACID *during the process of nutrition*, in some of the PECULIAR AFFECTIONS *of* WOMEN, notably in SUPPRESSION of the MENSES, and in CHRONIC MALARIAL POISONING, etc., I have found it highly efficacious."

DR. G. HALSTEAD BOYLAND, late Professor of Surgery, Baltimore Medical College, late Surgeon French Army (Decorated), Member Baltimore Academy of Medicine, Member of American Medical Association.

"In BRIGHT'S DISEASE of the KIDNEYS, ACUTE or CHRONIC, BUFFALO LITHIA WATER, Spring No. 2, is, in my experience, *without a rival*, whether in the PARENCHYMATOUS form or INTERSTITIAL NEPHRITIS. In cases in which the ALBUMEN in the URINE reached as high as 50 per cent., I have known it under a course of this water gradually diminish and finally disappear, at the same time other alarming symptoms were relieved and the sufferers restored to health.

"In STONE in the BLADDER of the RED LITHIC ACID and the WHITE PHOSPHATIC DEPOSIT, the SOLVENT power of this water is *unmistakable.*"

Water in cases of one dozen half gallon bottles, $5.00 f. o. b. here.

THOS. F. COODE, Proprietor, BUFFALO LITHIA SPRINGS, VA.

GORDON & DILWORTH.

A good name is priceless. This is a true saying, and every business house keeping it well in mind finds that its success depends upon the keeping of its reputation without stain. As purveyors of preserved fruit of all kinds, Messrs. Gordon & Dilworth have succeeded, by hard, faithful, and conscientious business methods, in establishing the reputation that any goods bearing their name are just as represented in every respect. Many times in their long career they have been compelled to submit to heavy pecuniary losses to do this, but they have courageously stuck to their principles not to let even the slightest deviation from "everything first-class" pass into the market, and their present enviable standing has proven that their position was right. It only needs to be told that their reputation for putting up preserves better and cheaper than any housewife can do it, has become so well known among ladies that many buy Gordon & Dilworth's preserves rather than put up any at home.

OSWEGO STARCH.

It is hard to tell which is the best known—Oswego Starch, or the name of the manufacturers, T. Kingsford & Son. Both are household words, and every lady in the land immediately points to Kingsford's starch as the best known to her. The manufacture of this staple article from Indian corn was the invention of Mr. Kingsford many years ago. It has since been improved so much that it now looks as if further improvement was impossible. At every fair and exhibition it has received the highest medals and awards. It is sold everywhere, and at as low a price as a really good and pure article can be sold for. It has had many competitors, but has out-distanced them all, until it is now recognized as the reliable standard starch of the world.

HARTSHORN'S SHADE ROLLERS.

Who has not blessed Mr. Hartshorn for his invention, which did away with the annoyances of the old-fashioned shades, which would never "stay put?" If we remember the multiform troubles with the original shade which we had to roll up by hand, tie, and then attempt to balance, and the first improvement upon these by the cord rollers, which, though a great step forward, gave us the disappointing experiences of stretching cords and cords out of the groove, mounting on tipping chairs to get them in order again, we feel thankful for the ingenious invention of the spring roller. As Mr. Hartshorn was the pioneer, he has steadily kept his improvements in the van; and, despite numerous imitators, there is no better spring roller made than Hartshorn's.

Fine Table Wines

From our Celebrated Orleans Vineyard.

Arpad Haraszthy & Co.

Producers of the

ECLIPSE

CHAMPAGNE,

530 Washington St.

SAN FRANCISCO.

GENERAL AGENCIES:

NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOSEPH R. PEEBLES' SONS CO., 73 West Fourth Street
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.

A BOY'S DIARY.—"Monday, hired; Tuesday, tired; Wednesday, fired."

DISAPPEARS.—The late Duke of Bedford made the twelfth peer to commit suicide during this century.

NEWSPAPERS TO-DAY.—One sheet of paper recently made was eight feet wide and seven and three-quarters miles long.

BRAIN WASTE.—At present some 1,500 tons of phosphorus are used every year, and chiefly in the manufacture of matches.

COPPER YIELD.—The production of copper in the United States in 1890 amounted to 278,610,000 pounds far exceeding any previous record.

GROWING SCARCE.—Gum arabic, which was once universally used, has become very scarce and dear, and a substitute for it is being made from starch.

MEDICAL ETIQUETTE.—There are few, if any, patents on surgical instruments. When a physician gets up some new device he does not obtain a patent on it, but any one is free to make it, and the profession secures the benefit of it.

LIGHTNING HORSE-POWER.—It has been calculated that the electro-motive force of a bolt of lightning is about 3,500,000 volts, the current about 14,000,000 amperes, and the time to be 1-20,000th part of a second. In such a bolt there is an energy of 2,450,000,000 watts, or 3,284,182 horse-power.

JAVA TIN.—The shipments of tin from the Banca and Billeton islands, off the coast of Java, and from which the Netherlands India derive a considerable income, exceeded 9,000 tons last year, says the Indian *Engineer*. The production of Banca showed a falling off, however, as compared with previous years.

TEDIOUS PREPARATION.—In the University of Coimbra, Portugal, fourteen years are now required to obtain the degree of M.D., six being spent in obtaining the ordinary education, three in a preliminary scientific course, and five in purely medical studies. Now the students complain because the final examination is conducted in Greek.

UTILIZATION OF INSECTS.—An electric apparatus supplies a strong light which attracts the insects and moths; a suction fan, worked by the electric current, draws them in when they approach the light, and carries them into a small mill, also worked by the electric current, where they are ground up and mixed with flour, and thus converted into poultry food of excellent quality. This is said to be a Bavarian contrivance.

SLIGHT CORRECTION.—Eleven hundred years or more before Christ some ingenious Chinaman, it has been affirmed, invented the mariner's compass. A writer in the *China Review*, who has been investigating the subject, now asserts that the first unmistakable mention of the compass in Chinese records is not earlier than the twelfth century; and that the instrument undoubtedly became known in Europe before the return from China of Marco Polo, who is fabled to have brought it in his luggage.

LOST CHILDREN.—The Missouri and Kansas Telephone Company is considering the introduction of what might be termed a "lost child service." It was originated in Indianapolis by G. J. A. Halford, a brother of Elijah Halford, President Harrison's private secretary. As soon as a child was lost the information would be telephoned to the central station. When a lost child was found, this also would be telephoned. The finding would then be telephoned to the number that reported the losing. In some cases the child has been restored to its mother in twenty minutes after the loss was reported.

INFECTION A CRIME.—A movement has been set on foot in Michigan for the passage of a State law making it a crime to give a person a communicable disease. There are some towns in the State in which this is true at present, as Battle Creek, where a person is liable to be sued for damages if he inoculates another with a communicable disease. It is certainly a crime to sow the seeds of disease, being as immoral and wicked to contaminate a man's well with typhoid fever germs as it is to throw Paris green into it. Yet it is singular how apathetic the majority of people are upon the subject, and how they allow themselves to be defrauded without protest.

ANTIPODAL QUEERNESS.—The Japanese are a curious people. The Japanese carpenter planes towards him instead of from him. The Japanese horseman mounts his horse from the right side. The address of a Japanese letter is arranged in strict accord with the progress from the general to the particular. Thus, a Jap writing to a countryman in New York would place on the envelope: 'United States of America, New York State, New York West Tenth street, 115, Hoe, Yank." A Japanese always gives a gratuity upon his arrival at a hotel or restaurant instead of upon his departure. In drawing a cork the Japanese waiter never turns the corkscrew, but whirls the bottle.

DISTANCES OF THE STARS.—It is quite a familiar illustration to represent the distance of the stars in terms of the *light-year*, but it has not been noticed that the same figures which express in years the time light occupies in reaching the earth from a star will also express in miles the distance of the star upon a scale of the radius vector of the terrestrial orbit to the inch. The illustration appears useful, as it gives, perhaps, a more distinct idea of the isolation of the solar system in space than can be otherwise obtained, and does not introduce the question of time into the measurement of distance. Thus, if the annual parallax of 61 Cygni is assumed to be 0".434, which is probably very nearly correct, it will take 7½ (7.464) years for its light to reach the earth, and 7½ (7.499) miles will represent the distance of this star on a scale that gives one inch to the distance of the sun from the earth.—*John I. Plummer, Nature.*



A HIGH-GRADE PIANO

AT A VERY MODERATE PRICE.

NEW DESIGNS. FANCY WOODS.

Terms Easy. + Monthly Instalments.

TWO, THREE AND FOUR PEDALS.

Catalogues, Prices, Terms, Etc., sent to any address.

EVERY PIANO WARRANTED 5 YEARS.

(Mention this Paper.)

THE ORIGINAL AND GENUINE
(WORCESTERSHIRE SAUCE).

LEA & PERRINS' SAUCE



In consequence of imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—

Lea & Perrins

Beware of Imitations; see that you get Lea & Perrins'

For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS, NEW YORK.

THE N. Y. HAY EXCHANGE BULLETIN.

OFFICIAL REPORT OF THE HAY AND STRAW MARKET AT NEW YORK.

COMMISSION SALESMEN.

NOTICE.

These names are arranged alphabetically.

WM. AFFLECK & CO.,
Commission Merchants in
HAY AND STRAW,
Office No. 5,
N. Y. Hay Exchange Building.

J. ALSDORF,
Commission Dealer in
HAY AND STRAW,
33d Street and 11th Ave.,
NEW YORK.

S. A. DECKER. F. W. TOMPKINS.
DECKER & TOMPKINS,
Commission Merchants in
HAY, STRAW, GRAIN,
Office: 16 New York Hay Exchange Building.

L. S. DILLENBACK. T. O. PECK.
DILLENBACK & PECK,
MAIN OFFICE:
Room O, N. Y. HAY EXCHANGE, N. Y. City.
STOREHOUSE AND BRANCH OFFICE:
101, 103 and 105 North 5th St.,
and 152 and 154 Berry St.,
Palmer's Dock. Brooklyn, E. D.

EDWIN B. DUSENBERRY,
COMMISSION MERCHANT,
And Wholesale Dealer in
HAY, STRAW AND GRAIN.
No. 1, N. Y. Hay Exchange, New York.

THOS. FONDA & CO.,
Commission Merchants
And Dealers in Hay, Straw, Grain and Country Produce,
13 & 14 N. Y. Hay Exchange Building.

N. A. FULLER,
COMMISSION MERCHANT IN
HAY AND STRAW,
33d Street and 11th Ave.,
NEW YORK.

J. H. Hubbel. Oscar Kent.
HUBBEL & KENT,
HAY AND STRAW
COMMISSION MERCHANTS,
New York Hay Exchange Building.
Personal attention guaranteed all consignments
Correspondence solicited.

THEO. P. HUFFMAN & CO.,
COMMISSION MERCHANTS
In Hay, Straw, Grain, Feed, &c.,
648 & 650 West 34th Street,
Bet. 11th & 12th Aves., N. Y.

The N. Y. Hay Exchange is located at 601 W. 33d St., corner 11th Avenue.

Only the cards of members of the N. Y. Hay Exchange appear on this page.

RULES FOR GRADING HAY AND STRAW

As Adopted by the N. Y. Hay Exchange.

CHOICE OR PRIME HAY—Shall be pure timothy, properly cured, bright, natural color, sound and well baled. No. 1—Shall be timothy, not more than one-eighth (⅛) mixed with "red top" properly cured, bright natural color, sound and well baled. No. 2—Shall be timothy, not more than one-quarter (¼) mixed with red top and blue grass, properly cured, good color, sound and well baled. No. 3—Shall include all timothy not good enough for No. 2, proportionately mixed with blue grass, red top, and clover, sound and well baled. SHIPPING—Shall include all hay not good enough for other grades, and may be natural meadow, free from wild or bog grass, and must not contain over one-third (⅓) clover, sound and well baled. CLOVER MIXED—Shall include all hay containing not over two-third (⅔) clover, and one-third (⅓) timothy, properly cured, sound, and well baled. CLOVER—Shall be medium grown, properly cured, good color, sound, and well baled. NO GRADE OR REJECTED HAY—Shall include all hay badly cured, musty, stained, or in any way unsound.

No. 1. RYE STRAW—Shall be clean, bright, long Rye, in bundles, sound, well and securely baled. No. 2—Shall be long Rye, in bundles, sound, well and securely baled. SHORT RYE—Shall be clean, not bundled, sound, well and securely baled. OAT STRAW—Shall be clean, bright, sound, well and securely baled.

In the New York market bale-wood is weighed in without tare. In all other markets it is deducted.

These quotations for choice, No. 1 and No. 2 hay are for large bales. 5c. per cwt. less when in perpetual press bales.

The New York quotations are per cwt. At other points, per ton.

NEW YORK, March 16, 1891.

The following are the market prices to-day at New York.

	Large Bales.	Small Bales.
Fancy Hay	65c @	60c @
No. 1	55 @ 60	55 @
No. 2	50 @	50 @
No. 3 and Shipping	45 @	45 @
Clover Mixed	45 @ 50	40 @ 45
Clover	40 @ 45	40 @
Long Rye Straw	80 @ 85	— @
No. 2 "	60 @	
Oat Straw	40 @ 45	
Wheat Straw	40 @ 45	

Receipts week ending March 14, as follows:

Via N. Y. Central	176 cars.
" West Shore	100 "
Other roads by Lighter, 34th Street	25 "
Total	301 cars.

The market has remained about the same.

Receipts have been smaller and have met with steady demand so that stock at various receiving points to-day is quite small.

Rye straw continues in large supply, and is in moderate request at quotations. Arrivals of oat straw have increased, stock is large and prices weaker.

Perpetual hay is in small supply and good demand.

H. B. Jenkins. F. S. Williams.
JENKINS & WILLIAMS.
COMMISSION MERCHANTS IN
HAY, STRAW AND GRAIN,
HAY EXCHANGE.

JOHN KERWIN & SON,
DIRECT RECEIVERS OF
HAY, GRAIN and GENERAL PRODUCE
DEPOT AND STOREHOUSES,
Palmer's Dock, Nos. 97 & 99 North Fifth Street
BROOKLYN, N. Y.
SHIPPING ADDRESS, PALMER'S DOCK, BROOKLYN, N.Y
West Shore R. R., N. Y. C. & H. R. R. R., N. Y. L. E. & W. R. R., Pennsylvania R. R., D. L. & W R. R., Lehigh Valley R. R., and connections.

W. J. OVEROCKER. PERRY HATCH.
OVEROCKER & HATCH,
Commission Merchants in
HAY, STRAW AND GRAIN,
33d Street & 11th Avenue, New York.
References: West Side Bank, New York City; Exchange Bank, Holly, N. Y.

Gilbert Plowman, NEW YORK. Spencer Billington, FORT HUNTER, N. Y.
PLOWMAN & BILLINGTON
COMMISSION MERCHANTS,
HAY, STRAW, GRAIN, &c.
No. 15 N. Y. Hay Exchange,
33d St. & 11th Ave., NEW YORK.

JAMES ROZELL & SON,
Commission Merchants and Wholesale Dealers in
HAY, STRAW, GRAIN AND COUNTRY PRODUCE.
N. Y. Hay Exchange, New York.

SKINNER, BLOOM & CO.,
Successors to Rogers, Skinner & Co.,
COMMISSION MERCHANTS
And Dealers in
Grain, Flour, Hay, Feed, Meal, &c.,
74 CORTLANDT STREET, - NEW YORK.
Barge GYPSIE, Foot Bridge St., Brooklyn.

H. SLINGERLAND,
Barges MERCHANT and HARVEST QUEEN
Foot of West 11th Street,
HAY AND STRAW.
Also, 33d and 35th Streets, and all Railroad terminals. Special facilities for lighterage free goods.

CHARLES F. SWAN,
Commission Merchant in
HAY, STRAW & GRAIN,
At all the Railroad Terminals in New York, Brooklyn, Jersey City, &c.
MAIN OFFICE,
108 BROAD ST., NEW YORK.

TITUS, WELLS & WILLETS,
Commission Merchants and Dealers in
HAY AND STRAW,
133 Roosevelt St.,
NEW YORK.

G. E. Van Vorst. James M. Hillery.
VAN VORST & CO.,
COMMISSION MERCHANTS,
HAY, STRAW AND GRAIN
N. Y. Hay Exchange, 33d St., & 11th Ave.
562 & 564 West 34th St., NEW YORK.

NOTICE.

These names are arranged alphabetically.

HOSMER, CRAMPTON & HAMMOND,

NO. 43 COMMERCIAL STREET,

BOSTON.

COMMISSION MERCHANTS,

HAY, STRAW, FLOUR & GRAIN.

E. B. HOSMER, G. W. CRAMPTON, BENJAMIN HAMMOND, A. L. ROBINSON.

BOSTON HAY AND STRAW MARKET.

Hay, choice to fancy in large bales	$13.00 to $14.00
Hay, choice to fancy, perpetual pressed bales	12.00 to 13.00
Hay, fair to good	11.00 to 12.00
Hay, poor to ordinary	9.00 to 10.00
Hay, Clover and Clover mixed	9.00 to 10.50
Hay, swale	8.00 to 9.00
Straw, Rye, good to prime	17.00 to 17.50
Straw, Oat	8.00 to 8.50

BOSTON, March 14th, 1891.

Receipts for the week are 198 cars of Hay and 29 cars of Straw; corresponding week last year, 397 cars of Hay and 18 cars of straw. There are still quite large stocks of Hay on the tracks and in the depots of the various railroads unsold, but they are considerably reduced from what they were a few weeks ago, and with the present moderate receipts, are being steadily reduced.

The market shows some improvement with a tendency to still better prices. Some cars of fancy Hay sell above our quotations. Rye straw is steady at quotations. There is very little demand for oat straw.

H. F. WILSON,
WIRE BALE TIES,
458 WEST 38th STREET, New York.

THURSTON'S IVORY PEARL TOOTH POWDER
WILL KEEP THE TEETH IN PERFECT CONDITION AND THE GUMS HEALTHY.
Price 25 & 50 Cents PER BOTTLE.

HAMMOND'S
CELEBRATED
Calumet Oleomargarine

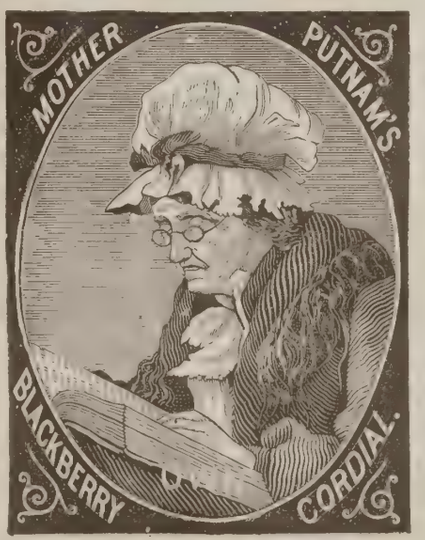
Strictly pure, cheap and healthful.
Ask your grocer for it.
Put up in packages of all sizes, also prints and rolls.

G. H. HAMMOND CO.,
607 to 615 THE ROOKERY,
CHICAGO.

Also offices at Boston, South Omaha, Neb., and Hammond, Ind.

We can save you Fifty Dollars when you Build. See A complete set of Plans to build from, simply state about price of dwelling desired. 25 cts. in stamps. Our book "Beautiful Homes." 25 cts. Our monthly book "The National Builder." 25 cts. Address
The National Builder, Adams Exp. Bldg., Chicago, Ill.

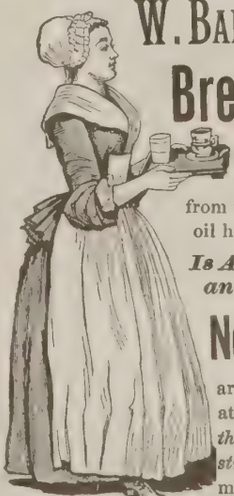
NATURAL MINERAL PURGATIVE WATER.
From the Springs of
VILLACABRAS.
Prescribed by the Highest Medical Authorities.
Stronger effects than any other under smaller volume. No smell—no repulsive taste—no after-constipation—no gripes. As a daily laxative it can be taken either pure or mixed with milk, tea or broth.
Sold by all Good Druggists.



C-U-R-E-S
DIARRHŒA, DYSENTERY,
MALARIA,
all ailments of the bowels. Is an anti-dyspeptic, and a **DELICIOUS INVIGORATIVE.** Leading Physicians prescribe it for **ADULTS AND CHILDREN.** *FOR SALE* by Druggists and dealers.
RHEINSTROM BROS., DISTILLERS OF FINE LIQUEURS,
54, 56, 58, 60, 62 E. 3rd STREET, CINCINNATI, O.

HARTSHORN'S SELF-ACTING SHADE ROLLERS
NOTICE SCRIPT NAME OF Stewart Hartshorn ON LABEL, AND GET THE GENUINE
HARTSHORN

GOLD MEDAL, PARIS, 1878.
W. BAKER & Co.'s
Breakfast Cocoa



from which the excess of oil has been removed,
Is Absolutely Pure and it is Soluble.
No Chemicals
are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.
Sold by Grocers everywhere.
W. BAKER & CO., DORCHESTER, MASS.

THE GREAT AMERICAN TEA COMPANY

LADIES

GET UP ORDERS.
Entire New Departure.
A HANDSOME PRESENT TO EVERY SUBSCRIBER.

THE GREATEST INDUCEMENTS EVER KNOWN TO INTRODUCE OUR NEW GOODS.

If you enjoy a cup of **Delicious Tea** send in your orders. 3½ lbs. Fine Tea by mail on receipt of $2 and this "ad". Beautiful premiums given away with $5 orders and upwards. The **most extraordinary bargains** ever offered, during the next thirty days. China Tea Sets and Lamps with $10, $15 and $20 orders to introduce our excellent **New Crop Teas.** Formosa and Amoy, Oolong, Congou, English Breakfast, Japan, Imperial, Young Hyson, Gunpowder, Sun Sun Chop and Mixed. Good mixed teas 20c. per lb. Headquarters in United States for Fine Teas. One pound of our tea will go farther than three pounds of trash. Thirty years' national reputation for selling **Pure Goods Only.**

THE GREAT AMERICAN TEA COMPANY,
P. O. BOX 289. 31 and 33 Vesey Street, New York.

PUBLICATIONS OF THE

ANALYST PUBLISHING CO.

THE AMERICAN ANALYST.
Weekly. Every Thursday. $1 per year.

THE ROOFER, TINNER AND SHEET-IRON WORKER.
Monthly. 15th each month, $1 per year.

THE LEATHER MANUFACTURER.
Monthly. 1st each month. $3 per year.

Reliable agents and representatives wanted everywhere on liberal terms. Address

ANALYST PUBLISHING CO.
19 PARK PLACE, NEW YORK.



THE CENTURY DICTIONARY

comes nearer to being a complete catalogue of the English language than any dictionary ever published. But it is not merely a dictionary: it is an encyclopedia of common things as well. It has been ten years in preparation. The leading scholars of the country have contributed to its pages. It is the latest dictionary and it ought to be, and is, the best.

A large descriptive pamphlet containing full-size sample pages, etc., will be mailed to any one sending five 2-cent stamps to

THE CENTURY CO., 33 East 17th St., New York.

A LARGE AND VALUABLE

Cook Book Free



We are enabled to offer our readers a most attractive combination, by which all may obtain a copy of the "Modern Cook Book" absolutely free. This handsome and valuable Cook Book has

320 Pages, Over 1,200 Recipes and Hundreds of Illustrations.

The recipes are the choicest selections from 20,000 that were received from practical housewives living in all parts of the United States, to which were added hundreds of the newest, best and most practical recipes of this progressive age, all of it set in new and large type, and the whole book handsomely illustrated.

IT HAS A BEAUTIFUL, ILLUMINATED COVER.

It is an elegant and admirably arranged volume of recipes for practical, everyday use. Among its points of excellence are the following:

Practical Suggestions to Young Housekeepers, Necessary Kitchen Utensils, Suggestions and Recipes for Soups, Fish, Poultry, Game, Meats, Salads, Sauces, Catsups and Relishes, Breakfast and Tea Dishes, Vegetables, Bread, Biscuit, Pies, Puddings, Cakes, Custards, Desserts, Cookies, Fritters, etc. Also for Preserves, Candies and Beverages; Cookery for the Sick, Bills of Fare for Family Dinners, Holiday Dinners, etc. A Table of Weights and Measures; Chapters on the Various Departments of Household Management and Work.

IT WOULD BE CHEAP AT $1,

As it is the Latest, Best and Most Practical Cook Book Published, More Nearly Meeting the Wants of American Homes than any other.

Any person accepting our offer will receive this paper one year, and also that charming home journal, the Ladies Home Companion, one year, together with the Cook Book, all mailed, postpaid, for less than the regular price of the two papers alone.

The Cook Book is offered absolutely free to induce thousands of our readers to become acquainted with the Ladies Home Companion, the publishers looking to the future for their profit, as they believe you will always want the Ladies Home Companion if you try it one year. Do not lose this opportunity to get the newest and best Cook Book free.

THE LADIES HOME COMPANION is a large and popular 16-page journal, published **twice a month,** and gives information about those things which ladies particularly wish to know, and is mostly written by ladies. **Original or Selected Stories** by eminent authors are found in each issue. A special feature is the variety of departments, each of which is conducted by a special editor. It gives the latest **Fashions,** arranged for practical use; timely hints to **Housekeepers;** cheering and helpful talks with **Mothers;** valuable information for lovers of **Flowers;** a pretty and pleasant page for pretty and pleasant children. All handsomely illustrated. It is not an ultra fashion paper, but a journal for the home circle, full of common-sense ideas and suggestions for home happiness and comfort.

OUR OFFER Send us $1.00 and you will receive **The American Analyst** one year, and also the **Ladies Home Companion** one year (24 numbers). And every one accepting this offer will also receive the above Cook Book, postpaid.

This offer is extended to **all** our subscribers. Subscribers whose subscriptions have not expired, or those recently renewed, are privileged to accept this GREAT OFFER, in which case their term of subscription will be extended one year.

Address THE AMERICAN ANALYST, 19 Park Place, New York.

"BILLET"

are

Carefully Selected

French Sardines,

Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,
HOWARD STREET, BOSTON, MASS.

To Subscribers, Readers and Advertisers.

SUBSCRIBERS' attention is called to the great variety of interesting and instructive subjects treated in this number. We respectfully ask the co-operation of our subscribers in extending our Subscription list, which will enable us still further to increase the value of the AMERICAN ANALYST to them.

The CASUAL READER is specially requested to examine our liberal premium offer.

ADVERTISERS who do not know of this Journal already, are respectfully referred to article headed "A Business Benefit."

ALL are kindly requested to peruse this number thoroughly.

The AMERICAN ANALYST can be had at any news stand in the United States. Any newsdealer will take orders for it, the American News Company being our wholesale agents. All postmasters will receive subscriptions.

Tabasco Pepper Sauce

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

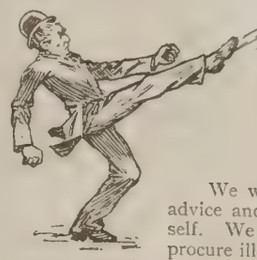
The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced, by connoisseurs, to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY,

NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

Don't kick



because your business is bad, but advertise If you don't know how to, write to us and we will tell you.

We will prepare your advertisement or give you advice and assistance to aid you in preparing it yourself. We will have the advertisement set in type and procure illustrations if any are needed. When a satisfactory advertisement has been produced we will furnish proofs and an electrotyped pattern to be used in duplicating the advertisement if the display or illustration make an electrotype desirable.

Address GEO. P. ROWELL & Co.,
Newspaper Advertising Bureau,
10 Spruce St., N. Y.

NATRONA BI-CARBONATE OF SODA.

ABSOLUTELY PURE.)

The nature of the raw material from which NATRONA BI-CARBONATE OF SODA is made—viz., kryolith, a mineral containing *pure sodium*—insures a purity and uniformity of product which cannot be obtained from any other known material. In making BI-CARB. SODA from any other RAW material, the use of sulphuric acid is a necessity, but none is used in any part of the process of making NATRONA BI-CARB.; hence its entire freedom from the slightest trace of arsenic, which is always present in ordinary soda. Its absolute purity and entire freedom from all traces of *sulphate of soda*, common salt and other impurities, render NATRONA BI-CARB. NEARLY TASTELESS, and being bolted through the finest bolting-cloth, insures the finest stage of division.

To these indisputable facts the attention of CONSUMERS of soda is specially called. They are IMPORTANT, and should influence both those who use and those who sell soda, to buy and sell NONE BUT THE BEST.

The NATRONA BI-CARB. Soda is kept in stock by almost every wholesale druggist and grocer throughout the United States, of whom it may be ordered.

Natrona Bi-Carb. Soda is unequaled by any other brand of English or American Manufacture.

PENNA. SALT MANUFACTURING CO.,

NATRONA CHEMICAL WORKS. PHILADELPHIA, PA.



ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,
184 Greenwich St., N.Y.

DR. PRICE'S CREAM Baking Powder.

Most Perfect Made

A Pure Cream of Tartar Powder—
Superior to every other known.
Used in Millions of Homes—40 Years the Standard.
Delicious Cake and Pastry, Light Flaky Biscuit, Griddle Cakes
Palatable and Wholesome.
No other baking powder does such work.

Vigoral

FOR

STRENGTH, NOURISHMENT AND REFRESHMENT.

PREPARED BY

ARMOUR & CO.,

CHICAGO,

From their celebrated EXTRACT OF BEEF, further strengthened in muscle-forming constituents by the addition of pure beef in powdered form.

Vigoral is seasoned ready for use and makes a delicious hot drink for cold weather.

SWIFT'S

CHOICE

Chicago Dressed Beef

AND

MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,

UNION STOCK YARDS,

CHICAGO, ILLS.

We shall be glad to supply our readers with any periodical published at club rates.

Send us a postal naming periodical and we will quote you prices.

ANALYST PUBLISHING CO.,
19 Park Place, New York.

GLENN'S SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,

C. N. CRITTENTON,

115 FULTON STREET,
NEW YORK.

Be progressive and keep abreast of the times. Avoid dyspepsia by using **Lard Compound** and **Cottolene,** a substitute for lard.

The highest medical authorities pronounce them healthful; and expert cooks commend them.

Our **Clairette** brand of cotton oil soap is the purest and best laundry soap in the market; as pleasant to the hands as genuine castile.

N. K. FAIRBANK & CO.,
CHICAGO AND ST. LOUIS.

The Standard of Excellence.

KINGSFORD'S

OSWEGO

Pure and Silver Gloss



STARCH

KINGSFORD'S
OSWEGO CORN STARCH
FOR
Puddings, Custards, Blanc-Mange, Etc.
THE PERFECTION OF QUALITY.
WILL PLEASE YOU EVERY TIME.
Always ask your Grocer for these goods.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 13. NEW YORK, THURSDAY, MARCH 26, 1891. WHOLE No. 213

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - - $1 per year.
Single Copies, - - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.

Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.

Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,

H. LASSING, M. D., } *Editors.*
T. P. McELRATH, }

No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

Adulteration of Food 146
Air Navigation 147
Animal, Mineral and Plant 148
Cleaning City Streets 149
Conversation Classes 147
Domestic Dietetics 149
Editorials 145
Condensed Cream? A Patent Centennial; Stricter Laws; Condensed Milk Swindles.
Hay Market Official Bulletin 152
Home Life in Spain 148
Nutrition 149
Rational Therapeutics 146

CONDENSED CREAM?

There is a brand of something, that looks like condensed milk, sold in cans, which the manufacturers claim is condensed cream. To condense cream the same as milk is condensed is an utter impossibility, because of the excessive amount of fat contained in cream. Cow's milk contains, on an average, 3.86 per cent. of fat. The cream of cow's milk contains 35 per cent. Fresh condensed milk without sugar contains, on an average, about 15 per cent. of fat, while that preserved with sugar contains btween 11 and 12 per cent. of fat. What we call fresh condensed milk, without the addition of sugar, is the kind of milk sold in bulk from wagons in the large cities, and will not keep any longer than ordinary uncondensed milk. If this kind of fresh condensed milk is put in cans and exposed to a high temperature, it is sterilized, and will keep until the can is opened and exposed to the air, when its keeping qualities are again reduced to those of ordinary milk. But in this sterilizing process the fat globules in the milk are broken up, and thus the entire character of the milk is destroyed. While fresh condensed milk is certainly superior to and richer than the best ordinary milk for use in coffee, it is only a substitute for cream and not cream. It is therefore clear that any manufacturer who puts up fresh condensed milk exposes it to a process which takes from it all the characteristics of milk and sells it for cream, and at the price of cream is selling to the innocent purchaser a different article from what it is, and perpetrates a gross fraud. We have been informed that the Pullman and Wagner palace dining cars use this stuff as condensed cream. They may learn from this article what its true nature is, and thus be enabled to save themselves from paying an inequitable price for an inferior article and imposing on their patrons.

A PATENT CENTENNIAL.

A national convention is announced to be held in Washington City from the 8th to the 10th of April, to celebrate the advent of the second century of the American Patent System. It appears at the first view to be a curious object for attracting national discussion, but it is promised the personal co-operation of the President and Vice-President, the Secretary of the Interior, Commissioner and Assistant Commissioner of Patents, the ex-Commissioner of Patents, Congressional Committees of Patents, United States Senators and representatives, prominent public officials and representative inventors and manufacturers throughout the country, all of whom have given their adhesion thereto, and from whom active participation and support are assured. The objects of this convention are, among others, to organize a national association for the mutual benefit of inventors and manufacturers; to secure a proper recognition of the rights of inventors; to operate to secure the perfection of the patent system; improvement in the practice of granting patents; increasing the protection afforded inventors and the owners of patents; removing existing obstacles in the way of a more thorough administration of the Patent Bureau; obtaining a more thorough knowledge of, and improving the great advantages already derived from, the patent system by all the varied industries of the country. There will be three meetings held each day of the convention, presided over by the President, the Secretary of the Interior, the Secretary of the Smithsonian Institute, the President of the National Board of Trade, and the American Philosophical Society, and other influential and prominent men, at which addresses will be delivered, by men of eminence and national reputation, on important topics, affording a vast fund of information hitherto generally unknown or unappreciated. As showing the character of the orators and their themes, it may be mentioned that Justice Blatchford, of the United States Supreme Court, will speak on "A Century of Patent Law;" Hon. Benjamin J. Butterworth, Chairman Committee House of Representatives, on "The Effect of our Patent System on the Material Development of the United States;" Senator Daniel, on "The New South as an Outgrowth of Invention and the American Patent Law;" Professor Mason, on "The Birth of Invention;" the Commissioner of Patents, on "The Birth and Growth of the American Patent System;" Senator Platt, on "Invention and Advancement;" Hon. Edwin Willits, Assistant Secretary of Agriculture, on "The Relation of Invention to Agriculture;" Hon. Carroll D. Wright, Commissioner of Labor, on "The Relation of Invention to Labor;" Professor Cyrus F. Brockett, on "The Effect of Invention on the Progress of Electrical Science;" Octave Chanute, President of the American Society of Civil Engineers, on "The Effect of Invention Upon the Railroad and Other Means of Inter-Communication;" Professor Thomas Gray, on "The Telegraph and Telephone; Hon. A. R. Spofford, Librarian United States Congress, on "The Copyright System of the United States."

STRICTER LAWS.

No honest person can consistently object to a law which compels every manufacturer of a food product to state on the label every ingredient in the package which is not usually found in that particular kind of product. For instance, it is admitted on every hand that baking powder should be composed of cream of tartar, bicarbonate of soda, and just enough flour or starch to preserve it. If one manufacturer claims that by the addition of carbonate of ammonia he can make a better and more wholesome baking powder than his neighbors can without the addition of that unsavory ingredient, he should have the courage of his opinion and state that fact on the label. Thus the Royal Baking Powder Company, in the honesty of their purpose, should put on their labels, "This model baking powder, which we claim is the standard by which all other baking powders are to be judged, is superior to any other because it contains ammonia." They might add in an exuberance of candor, "We add ammonia, which is much cheaper than cream of tartar, not as an adulterant, but to increase the leavening power of our baking powder. It is a natural product, made from gas-house refuse, and was originally made from the drippings of stables. This is why we set ourselves up as the standard, and also why more scrupulous manufacturers cannot compete with us. It may be considered a drawback by thinking housekeepers, but we more than make up for this by the unparalleled veracity of our advertisements." At all events, the law assuredly should compel the Royal Baking Powder Company to note the fact that they use ammonia in their baking powder on their labels. If such a law were introduced, however, in any State legislature, the Royal would move heaven and earth to defeat it. This may be a useful hint to some legislators. The fact remains that such a law is needed, and such a law not only applying to ammonia, but to every adulterant, will surely be introduced in

every legislature in the United States, and the voice of the press and public opinion will be strong enough to pass it. The time has arrived for establishing more legal safeguards about our food.

CONDENSED MILK SWINDLES.

If a can of condensed milk costs sixteen cents, and contains sixteen ounces net, it follows that a can containing but thirteen and a half ounces net at the same price, is two and a half cents too dear, both being of the same quality. If the can containing but thirteen and a half ounces is sold for fourteen cents, it is really one-half cent dearer than the full weight can. The propositions just stated really exist. In fact, we know of but two concerns who put up full weight cans, one of these does so with only one of its brands, the other with all their brands. All the rest are deliberately swindling the consumer. The flimsy excuse that they do not claim to put sixteen ounces of condensed milk in their cans is not worth considering, because they make their cans of such shape and thickness that they really look to the inexperienced purchaser as if they contained as much or more condensed milk as the full weight cans. The grocer who buys these short weight brands knows full well what they are, and as he pays less for them than for full weight brands and sells them at a higher price he is a party to the swindle. Two and a half ounces of condensed milk stolen from the consumer out of every supposed sixteen ounces, means an additional profit to the swindlers of nearly sixteen per cent, a larger profit than can be made in the business by legitimate means. The only way in which the purchaser can avoid this imposition is to refuse to purchase any condensed milk which has not a guaranty of the net weight of the contents plainly printed on the label. The AMERICAN ANALYST is having prepared a table showing the net weight of the contents of the various brands of condensed milk usually sold by retail grocers, which, together with the retail price and the actual cost per ounce, will be published at an early date for the benefit and guidance of our readers.

ADULTERATION OF FOOD.

THE ONE WAY IN WHICH THE STATE COULD PROVIDE A REMEDY.

Our desk is covered with appeals from correspondents in all parts of the country, says the *Journal of Commerce*, for help to prevent the frauds now practiced in the adulteration of food. The evil has grown to be one of enormous magnitude, and it is difficult to devise any effective method for its suppression. The very class that now makes the loudest complaints have been largely instrumental in making such adulteration profitable. When greedy schemers first began to mix cheaper or worthless substances with the genuine article in supplies for the table, there were very many honest manufacturers and dealers who refused to sanction the fraud, and still put up and offered for sale the labeled product in its purity. If their customers had stood by them in this contest the rogues would have gone to the wall and honesty would have triumphed. But the head of the household, or his good wife who did the marketing, would not pay the few cents extra demanded for pure butter, pure coffee, pure pepper, pure mustard, pure ginger, pure hogs' lard, pure olive oil, and was too often found willing to accept a mixture at the lower cost. A grocer once called our attention to his shelves, on which was a row of pure spices he had held in stock for a year with but few missing packages, while he had
f mixed and almost worthless trash be-
e had at lower rates. We have no doubt
gave way too soon, and that if they had
ould have brought the public round to
f the unadulterated article without re-
t. The difficulty of effecting a reform through the returning good sense of the customers at this day is in the fact that the articles in question are mixtures, and customers have no ready means of testing the quality and thus securing the pure, which a very large majority of the people most certainly desire. In coffee the housewife may purchase the bean in its green state or already roasted and grind it herself, as the mill will cost but little ; but in spices, lard, oil, baking powder and the like the buyer has no method of detecting the fraud at the moment of trading, nor even when the use has been found to be unsatisfactory can he always tell what it is that has contributed to that result. Bicarbonate of soda and cream of tartar, with flour or other farinaceous substances enough to keep the acid and alkali from neutralizing each other by unobstructed contact, make the model baking powder. Ten per cent. of flour is sufficient to preserve the materials for use, but why not add 20, 30 or 40 per cent. of the cheaper product when all are white and no mere visual inspection can detect the increase? It is true that with such addition it will not have quite the same yeasty power as the standard article, but only an expert can detect the difference. Greed does not stop here, however. Ammonia, tartaric acid or alum will produce a result similar in most results to the soda and cream of tartar, and cost far less ; hence they are largely used. Advertising in the papers, and all over the fences, stairs, blank walls, and other vacant places about the city, costs a great deal of money and lessens the profits of the compounder, and by using less expensive ingredients he can recoup the loss. It is here, and here alone, that the interference of the law can be defended. Where the customer can detect the adulteration at the time of purchase, it is only his own cupidity that betrays him. He takes a poor article because it is cheaper and as he hopes will answer the same purpose as that which is pure and would cost more money. But when the mixture is of such character that it cannot be detected by inspection, and especially where the articles used as adulterants are noxious or in any way injurious to health, it would seem to be within the province of legislation to provide a remedy. How shall this be done? In what way may the law properly interfere to protect the innocent from the guiles of the deceiver? Hitherto the efforts in that direction have been confined for the most part to restraints upon the producer. This has been resisted on the ground that it interfered with valuable industries. The pure hog's lard, say the mixers, will not do to ship, will grow soft in any climate, and becomes utterly worthless in a hot country. Therefore the product of cottonseed and the various other hardening compounds that are added are really, as they insist, a benefit to mankind. Oleomargarine, according to the patentee, is a blessing to the race. Beef fat or any greasy material "digested with a pig's stomach," as the patent provides, and deprived of its repelling odor, is represented as not only a desirable addition to the world's products, but is far healthier than poor butter that comes from the dairy. Therefore the producers churn it with a little cream to make it taste like the product of cow's milk, and sell it, not only for boarding-house purposes, where it is largely consumed, but even for the tables of private families, many of whom depend on unscrupulous grocers and cannot detect the imposition. It seems to us that a way might easily be provided to give these ingenious and enterprising manufacturers the full benefit of their industrial undertaking, and at the same time defend the people from undetected fraud. Let the law insist that every one who puts up any food product for market shall stamp it with his name and address, and affix a true statement of the contents. If he wishes to keep the proportions a secret, he may be allowed that reserve, but compel him, under a sufficient penalty, to describe by its proper title every article contained in the mixture. The committee of Congress, in their investigation, found that a large quantity of a manufactured article was put on the market labelled "Pure Family Lard" which had nothing in it that came from the hog. If the actual contents of every package had been printed or branded thereon, and the people had chosen to purchase it, no one would have a right to interfere. Every package of baking powder should have on it the name of the ingredients. If the consumer has no objection to tartaric acid or alum, it will not hurt the sale to have the fact of their presence duly inscribed. Instead of "Pure Old Java" on a package that purports to be ground coffee, let the inscription read "A mixture of coffee with chicory, roasted wheat and beans, split peas, rye and potato flour, mangelwurzel, acorns, lupine seeds, ground date stones, scorched cocoa shells, licorice and burnt sugar," or so many of these as have been added. Instead of "Pure Ground Pepper," we might have "Pepper leaves with mustard, wheat flour, sago, charred wood, chillies, rape seed, potato, manignette, chicory, rye, olive stones, bone dust, and marine salt." We have not exhausted the list of things actually found as substitutes or adulterations of pure pepper, but this would do for a beginning. For mustard, the label might read, "Ground mustard mixed with wheat flour and colored with turmeric or Martin's yellow demitro naphthol." If this did not suit we have seen cayenne pepper, gamboge, potato starch, pea flour, radish and rape seed, linseed meal, yellow ochre, chromate of potash, plaster of Paris and clay in a package called mustard. We have named nothing that is not common in the packages of these so-called "spices." No manufacturer ought to object to this test. If his added ingredients are innocuous, and the people are likely to esteem them, it is only fair to let the buyer know where he can get them. If he purposely or "inadvertently" omits anything from his descriptive list which the package contains, let him suffer for his want of memory or intended fraud. For table use the greater portion of the golden fluid now offered in beautiful glass bottles with showy labels as the product of the olive might more truthfully be described as "Pure cottonseed oil for salad purposes." Why not compel the producer to print the truth on his ticket? Then those who wish to patronize this "great and growing industry," as it has been recently described, would know exactly what they were eating, and no one be wronged in the matter. We suggest that this would solve some of the vexed problems, and remove every ground of complaint from the manufacturer who prepares these adulterated or substituted products, and insists that he is contributing to the sum of useful inventions.

RATIONAL THERAPEUTICS.

RELATIONS OF THE MODERN HOMŒOPATHIST TO THE MEDICAL PROFESSION.

The term homœopathist does not any longer convey any definite idea of the school of practice followed by the individual to whom it is applied. If it is applied to one of those conscientious old fogies who still sticks to the Hahnemann idea of *similia similibus curantur* with its high potencies it may be correct in one sense, but this class will soon be of the past, and therefore is hardly of sufficient importance to deserve mention. If applied to the very large majority who cling to the name and profess to practice its tenets, because it catches the popular fancy, it is a misnomer, for, judging from their organs, they use the most powerful allopathic remedies, and employ largely the much advertised pharmaceutical preparations of the day. Another and rapidly increasing class to whom the name is applied, is that large and influential number who would be more correctly designated as physicians. They are conscientious, educated, scientific, progressive and use every thing that experience has shown to be curative. This class are the pioneers who are bravely and steadily paving the way for the abolishing of the different "schools," who believe in the highest attainable education. Changes have already taken place, as in the change of the *New York Medical Times* from "a jour-

nal for homœopaths" to "a journal for physicians," with the advice from its learned editor, Dr. Egbert Guernsey, to all graduates of homœopathic colleges to drop the name "homœopath" entirely; and as in the late announcement of the Cleveland Homœopathic Medical College that hereafter the United States Dispensatory will be used as a text-book, and that the lectures upon materia medica will include all the principal drugs given in it! Much has also been done towards meeting this liberality of these physicians, half way at least, by those who were always known as the "regulars" or "old school physicians," thus the hostility of the average doctor to the disciple of Hahnemann is not half so pronounced as was the case a decade ago, as is evidenced by the promptness with which certain prominent surgeons respond to the call to operate for homœopathic practitioners; again, the rapid increase of "new code" men even outside of New York, is significant of a change; so, too, is the fact that many post-graduate schools admit graduates of Hahnemann colleges, and still more is the fact that an ex-president of the American Medical Association has openly avowed his practice of consulting with all legally-qualified practitioners whether "regular," "homœopathic" or "eclectic," and absolutely no notice of it has been taken by that association! But even more may be done. It should be the duty of every teacher of therapeutics to carefully select the good things of homœopathy as well as of eclecticism and present them to his students. This may not be practicable at this time, but it will become so at no remote date; for physicians are more broad minded in their investigations and the "old school" cannot deny that they have gained much by the work done by homœopathists, for instance to look more closely at the symptoms present in a particular case, and by means of "specific medication" (derived in great part from the "eclectics") to combat those symptoms before they become dangerous; and still better have learned simplicity in the administration of drugs; one of the rules of homœopathy is "the single remedy"—the old school have been giving too much medicine, and were centuries in recognizing it. But polypharmacy is giving way to the rational therapeutical application of remedies—the draughts and potions, the nauseous pills and bitter solutions are being superseded by simpler, pleasanter and more efficacious methods of drug administration. If this tendency toward liberalism continues, homœopathy will soon vanish from the earth, and eclecticism will go simultaneously. There can be no doubt of this—the handwriting is on the wall, and the obliteration will be by the broadening process.

CONVERSATION CLASSES.

EVIDENT NEED OF THEM FOR YOUNG LADIES IN SOCIETY.

Some two winters ago a cultivated and enterprising woman, who wished to turn an honest penny, looked about for an opportunity of exercising her several pretty talents with profitable results. With almost the inspiration of genius she concluded to hold classes in conversation. On first thought, her friends were greatly amused; and yet, when her explanation was made, they began seriously to wonder how society had moved along satisfactorily without the aid of lessons in conversation, says the *Illustrated American*. The woman's idea was clever, indeed. "People," she said, "are taught to read, write, walk, eat, dance, play and sing; but rarely are they taught to use their tongues, in everyday speech, with ability and discretion." She, therefore, proposed not only to lecture, but also to give practical lessons to the shyly or stubbornly-silent woman; the woman awkward in conversation; the woman ambitious of getting acquainted with her fellow-beings, yet ignorant of the graceful turns of speech; the woman afflicted with a harsh voice, unpleasant accent and untuneful and ill-timed laughter. Young women she hoped to gain as her pupils—girls about to enter society, or those suffering from personal defects of manner, which, if corrected in youth, would not in after years become objectionable and irremediable characteristics. Carefully the simple curriculum for the study of this pretty accomplishment of conversation was prepared. Some friends, partly from curiosity and partly from careless generosity, joining the class, shortly converted it into a gossip-tea, and the little conservatory of conversation lost its object and its standing, and very quietly died of sheer lack of life. Yet by no means has this result proved that the gentle art cannot and should not be taught and learned on the original plan proposed, for when not very long ago mention was made of the unfortunate little class, letters came from individuals anxious to know if it was still in existence, and how they should make application for instruction. These letters were straws showing that in any of our big cities an intelligent woman, fitted for the task by education and breeding, could by skillful management reap handsome profits from an employment full of interest, importance and dignity.

AIR NAVIGATION.

WHAT THE "SCIENTIFIC AMERICAN" SAYS ABOUT THE PENNINGTON AIR SHIP.

The rapid strides which of late have been made in the practical applications of electricity have prepared the way, in the public mind, for the ready acceptance of almost any new and striking proposal. In the popular belief the flying machine is next to an accomplished fact, and no very great surprise probably would be occasioned if the announcement were to be made to-morrow morning that a line of air ships had commenced to run between Chicago and New York. We are sorry, however, to be obliged to dash the hopes of a confiding public by the cold, unfeeling statement that the art of flying in the air by mankind has not yet been learned nor the means thereto invented. Looking at the subject from a practical point of view, our glorious people are likely, for some time to come, to be confined in their locomotion to the actual earth's surface, and to railway cars that make only from fifty to seventy-five miles an hour. But there are various schemes for air flying, and they look fine on paper. One of these paper enterprises has been widely made known in Chicago. It is styled the Pennington air ship. Twenty millions of dollars is the modest amount of the capital. A few of the shares have been reserved for sale to a hungry public. Those who have a dangerous surplus of cash on hand can promptly reduce it by investment in this deceptive and visionary scheme. Mr. E. J. Pennington, of Mt. Carmel, Ill., the inventor, says: "The main part of the machine is the buoyancy chamber. This in shape is an oblated spheroid, being larger at the centre and tapering symmetrically to a point at either end, and looks like a huge cigar. On the inside of this chamber are two compartments, one is a receptacle for gas and the other is used as an engine-room. The engine that occupies this room is a three-cylinder rotary and propels the large wheel in front of the ship. The fuel that supplies this engine is gas and is fed direct. The main shaft on this engine is hollow, and the large propeller is keyed directly on to it. This shaft is made hollow to allow the air to pass through it in the cylinders to keep them cool. On the top of the buoyancy chamber is placed the sail. This extends its full length and can be manipulated so that the currents will act to propel the ship as it does a sailing vessel in water. Attached to this sail is the rudder that guides the ship either to the right or left, and underneath this rudder is the tail; this tail is patterned after a bird's tail, and is used to raise or lower the ship independent of the propeller wheels at the sides. On the sides of the chamber are placed the wings. These wings are so made that when the ship is descending they improvise themselves into parachutes, which makes the descent gradual. On each of these wings are placed two propeller wheels, for raising and lowering the ship. Underneath the chamber is hung the cabin, and underneath the cabin are placed the storage batteries. The weight of these batteries makes them useful for ballast, and are used to keep the ship in the proper position. On the four corners of the cabin are the stands, or brackets; these are cushioned, and when the ship alights not the slightest jar is perceptible. To explain how the ship is started, we will suppose a trip is about to be made; enough gas is put into the buoyancy chamber to make the whole ship weigh nothing, the propellers are gradually started and the ship gently rises from the surface of the earth until a height is reached to clear the tree tops and buildings in the course to be traveled. If there were any mountains or hills to clear, a uniform height could be attained at the start, so that a straight course to the destination could be made. When it is desired to make a landing the ship's bow is headed to the wind, and the rudder set so that the current of air will place the ship at the desired point, the same way that a landing is made by a steamboat. The whole construction being of aluminium makes it lighter and stronger than any other material; that is, it will take less gas to raise it, and the great tensile strength of this metal will allow it to be rolled thinner than silk and still retain as much strength as steel three times as thick. The gas engine and all other mechanical devices on this ship are patented, which gives the company the exclusive benefit of their use for a long time." The use of the storage batteries is not explained; probably, however, they are for lighting the cabin. Where the gas is to come from to work the gas engines is not set forth. To assist in floating this stock-jobbing enterprise the promoters have made what they call a practical demonstration of the invention on a small scale, which is now exhibited in the exposition building, Chicago. This little side show consists of a thirty-foot cigar-shaped balloon, inflated and raised by gas, and worked by means of a fan propeller, operated by a small electric machine carried below the balloon, which electric machine is worked by means of a wire extending from a battery on the ground. This float is tied to a string, and when the current is turned on, the machine moves slowly around in a 50 ft. circle in the still air of the building. It is said to be interesting to see this cigar balloon move; but as a demonstration of anything new or promising in the way of aerial navigation it is without value.

USEFUL HOUSEHOLD ARTICLE.—After a housekeeper fully realizes the worth of turpentine in the household she is never willing to be without a supply of it. It gives quick relief to burns; it is an excellent application for corns; it is good for rheumatism and sore throats. Then it is a preventive of moths; by just dropping a trifle in the drawers, trunks, and cupboards it will render the garments secure from injury during the summer. It will keep ants and bugs from the closets and store-rooms by putting a few drops in the corners and upon the shelves; it is sure destruction to bedbugs, and will effectually drive them away from their haunts if thoroughly applied to all the joints of the bedstead, and injures neither furniture nor clothing. A spoonful added to a pail of warm water is excellent for cleaning paint.

LIFE LENGTHENING.—Human life is estimated to have lengthened twenty-five per cent. during the last half century. "The average of human life in Rome, under Cæsar, was eighteen years," says Dr. Todd, of Georgia; "now it is forty. The average in France fifty years ago was twenty-eight; the mean duration in 1867 wes forty-five and one-half years. In Geneva, during the thirteenth century, a generation played its part upon the stage and disappeared in fourteen years; now the drama requires forty years before the curtain falls. During the golden reign of good queen Bess, in London and all the large cities of Merry Old England, fifty out of one thousand paid the last debt to nature yearly, which means that instead of three score and ten they averaged but one score. Now in the City of London the average is forty-seven."

ANIMAL, MINERAL AND PLANT.

CHARACTERISTICS OF THE KINGDOMS OF NATURE.

According to the old school-books, all nature is divided into three kingdoms—the Animal, Vegetable, and Mineral. This is a very convenient classification, as no one is likely to mistake a mineral for a plant or animal, or—in the higher and more familiar forms at least—to confuse a vegetable and animal organism. A more rational and strict classification would be to distinguish two kingdoms only—the organic and inorganic, or the living and dead forms of matter; for, as was shown by Professor Stoller in the January number, the line between amimals and plants is by no means strongly marked, and among certain lower forms of life it is often a puzzling question to decide whether they should be considered as vegetables or animals. An animal may be broadly defined as a vitalized aggregation of matter capable of motion and reproduction, and endowed with perceptive faculties which enable it to take cognizance of the outside world, and sustaining the chemical process of life by nutritive material obtained from external sources; while a vegetable is fixed to and grows from a certain point, and has no perception of outward conditions. These definitions are evidently very faulty, as certain plants—like the ferns and seaweeds—produce microscopic organisms endowed with the power of motion; while the familiar growth of a potato-sprout towards the light, and the motions of the insectivorous plants, seem to show that they are sensitive to external impressions to a certain degree. The most characteristic difference between a plant and an animal, and one affording perhaps the best means of classification, is a chemical one. Animals, as a rule, are oxidizing machines; they take in nutriment prepared for them by vegetables—either directly or after passing through some intermediate animal organism—and oxidizing or burning it in their bodies, throw it off in the form of water and carbonic acid gas. The vegetables seize upon these waste products of animal life, and by the aid of the sun's radiant energy, remove the oxygen and build them up again into nutriment for the animals to oxidize in their turn. The plant reduces; the animal oxidizes; and this while not a perfect distinction, is as good as any that we have. The yeast plant—if it is a plant—is one of the most familiar apparent exceptions, for, feeding as it does upon the highly complex molecules of glucose, it breaks them up into the simpler and more highly oxidized substances, alcohol and carcobonic dioxide, after the habit of a true animal. In the mineral or inorganic kingdom, however, there is no uncertainty. The presence of vitality in matter is unmistakable, as is the presence of organs adapted to special purposes of nutrition or reproduction. The moment a plant or an animal dies, it practically passes over to the mineral kingdom; its organs cease to exercise their functions, and, if left to itself, the chemical compounds of which it is composed are soon changed into simpler and permanent forms. While the mineral kingdom is thus a very broad one, we may consider as a more characteristic type a crystalline body—a lump of salt, for instance—for there are few inorganic solids that are not crystalline in structure to a greater or less degree. Iodine, for instance, always occurs in well-defined crystals; while in the best qualities of glass it is not at all apparent, although a tendency to crystallization is always present. If we allow a saturated solution of a chemical compound to slowly evaporate, it returns to the solid condition in regular geometrical shapes. In the case of common salt, the form is that of a simple cube; other substances—tartaric acid, for instance—take very complicated forms, which require considerable mathematical knowledge to understand. By proper precautions we can cause our salt crystals to increase in size from the minute points which first appear, to cubes of several inches. In this sense the crystal grows like a plant or animal; but how different is the result! The salt crystal is nothing but a crystal from its very beginning. The largest and smallest are identical in everything but size; it possesses no function but that of simple accretion, and, of course, has no specialized organs, either for perpetuation or reproduction. If left undisturbed it will continue in existence for ever, neither increasing nor diminishing in size, nor reproducing other similar forms. In this sense the crystal may be said to be immortal. And yet there are some curious analogies between the crystal and the animal. Both have a definite and—within certain limits—an unvarying shape. It is not an entirely absurd supposition that the same forces which determine the unvarying shape of the salt crystal may also cause each living organism to resemble its predecessor. Although crystals have no distinct organs, they have a differentiated structure—as is shown by the phenomena of dichroism, double refraction, and the thermo-electric properties of tourmaline and other minerals. A curious imitation of the phenomena of reproduction may even be observed in supersaturated solutions of certain salts, like sulphate of soda, which remain perfectly clear until the magic touch of a minute crystal of the same substance causes them to be converted into an almost solid mass of similar crystals. Of course, these analogies are merely fanciful. The gap between living and dead matter is, as far as we know, an impassable one, and beyond our comprehension. But the forces of Nature are always in existence, and act upon all forms of matter alike; and it is not entirely irrational to surmise that in time to come we may discover a closer connection between the three kingdoms than is now evident. If we admit that the same force which determines the form and structure of an amœba determines also that of a man, it is not beyond the bounds of possibility that the wonderful structural phenomena of inorganic crystals may be conditioned by the same natural law, of which at present we can hardly do more than perceive its existence.—*Pop. Science News.*

HOME LIFE IN SPAIN.

THE SERVANT GIRL QUESTION IN CASTILE.

A correspondent—manifestly feminine—of the *Boston Transcript*, writing from Madrid under date of February 23d, discusses the question of domestic servants in that land of sun and flowers as follows:

Perhaps your lady readers would like to know what Spanish domestics are like, since the problem of the day is how to get good servants. Housewives all over the world are deeply concerned over the question and especially in the United States, where a good servant is daily getting to be more rare. Spanish domestics are in many ways unlike those of other countries. They are sometimes downright bad, as anywhere else; but there is a fair, average class, who, if not exactly saints, are at least free from the new-fangled notions of equality, division of labor and similar ideas, which have not yet had time to enter their heads. These know that they are servants and are content with their condition in life; yet there is a quiet dignity and pride about them which superinduces a feeling of kindness and makes you treat them well. They are easily managed by gentleness and just enough firmness to show, without driving them too hard, that you intend to be obeyed. They are, however, apt to take their bit between their teeth, and get to be presumptuous, meddlesome, argumentative, nay insolent, if any degree of familiarity is allowed. They are not overtruthful, generally; yet, if you come across a fair sample of a domestic as you often may, it is best not to show any mistrust. You can leave your purse and jewel case open without fear of loss; not only will they respect your property but frequently they will defend it and defend the trusting mistress with a dog-like fidelity that is really touching. At other times their devotion to the household interests is carried too far, even to the verge of officiousness, especially in their dealings with shopkeepers. Then again your Spanish servant, when she has been long in a house thinks and speaks of you and your wordly goods, and in every way acts, as if she had a vested right in the same. It is "our children," "our furniture," "our cats," "our house," and "we are going to travel," and "we intend doing this and that," etc. A servant in Spain is paid by the month; she can be sent away, or herself give warning to the family at a moment's notice. The law, it is true, requires that fifteen days' notice should be given on either side, but this practice is never enforced, as Spanish temper is too quick to allow of people living under the same roof to abide together when they have once disagreed. I wonder what an English or an American housemaid would say if she were told that besides doing all the housework, she was expected to attend to the washing, the ironing, even that of master's shirts, the mending, and to answer the door; all this a Spanish "doncella" has to look after for six dollars a month, which is accounted good wages. She rises at dawn, and after serving up the early tea or chocolate, ties a large handkerchief round her carefully combed hair and sets about the housework. She bustles about for hours, until everything looks neat and tidy. She takes great pride in making the beds, every mattress is turned and not a crease must be seen in the counterpane. By twelve o'clock she is ready to wait at table; she has been on her feet since sunrise, and only sits down at 1 P. M. to her well-earned lunch. During the whole afternoon she either irons or sews, and when night comes it is no wonder if she has little heart for a book, or if she falls asleep on her chair, waiting until the mistress comes home from the ball or the theatre. Then she is sent to her bed. The Spanish cook or "cocinera" is quite the reverse of the "doncella," for she is the laziest creature in creation. She does her cooking, goes to market every morning, and cleans the kitchen, once a week, on Saturdays. In some houses she has to do the washing, but this is only the case in a small family. A cook in Spain earns from $6 to $10 a month, according to her expertness. As I have said she does all the marketing, every morning she waits on her mistress for money and orders, and every evening—as few know how to write—the mistress jots down her expenditure. The cook is a queen in her kitchen, and the rest of the domestic servants look up to her for their victuals, as it depends on the respect shown her whether the meals are good or bad. When the servants dine she deals out their portion, and never thinks of sitting down until they are all served. Spanish servants have simple tastes, but they must be well fed. In the morning they each have an ounce of chocolate prepared in milk and a roll of bread. At lunch they expect a dish of greens—beans, potatoes, or other vegetables—cooked after the national fashion, and a dish of meat. The dinner consists of a plate of soup, the abundant and nourishing "puchero," and whatever is left from the table, with either fruit or salad. They rarely drink wine, but must be allowed as much bread as they can eat. Of Spanish female servants there is one that rules the roost. She is the tyrant of the household and the dread of masters and menials alike. This is the "ama" or wet nurse. Servants will oftentimes throw up a good position as soon as a baby is born, in order not to have to put up with the "ama." She makes her sway felt from top to bottom of any home. Nor must her temper be ruffled, as baby might suffer in consequence. Her appetite is ferocious; it is never satiated. She is totally unfit for all work beyond that of carrying her charge. She has a fondness for finery so developed, that she either sulks or threatens to leave if she is refused a dress or ear-rings finer than those worn by the "ama" next door. As poor, little, Spanish babies are not strong, their very lives depend on the proper nursing of these healthy, brutal women; so that a young mother will put up with anything rather than run the risk of losing her "ama." A Spanish man-servant is, indeed, a curious type. In grand, aristocratic houses, the footmen and flunkeys are the same all over the

world ; but the "majordomo," or butler, is a person to be feared and respected in his black cloth and silver chain. He is very honest if you trust him, and he does his work splendidly. He burnishes the silver plate until it shines like the sun at noon time, and he brushes his master's clothes until all the nap is taken off. But it is in minor questions of style or tact that a Spanish man-servant of this class is deficient. He can never be made to stand up straight on his legs ; his invariable rule is to assume a lounging gait—to lean upon a table or against a wall, while he condescends to receive your orders. He is, however, so good-natured, and grins so heartily at any remark overheard as he waits at table, that you cannot find it in your heart to get angry with him. He will at times volunteer a reply to a question put by you to a guest ; and if no guests are present he has been known to join in the family conversation. He is exceedingly fond of gorgeous neckties and pea-jackets ; and if you go the length to bestow a "frac" or dress-coat upon him, he looks so awkward and ungainly when he puts it on that you are fain to regret the generous impulse which prompted you to such munificence. You sigh to see him once more in his old clothes. This is a sort of man-servant everybody has in Spain ; the poor fellow is badly paid, for he never earns more than thirty or forty "pesetas" a month. So many Spanish families are in one way or another connected with the army, that they frequently secure the services of a soldier. Young men who enter the ranks as conscripts every year are eager to secure the berth of "asistente" in an officer's family. They at once become the Jack-of-all-trades or factotum in a house. Indeed, it is wonderful to see with what cheerful alacrity these lads undertake the most extraordinary duties of a man. Not only will they do anything expected from an ordinary servant, but you may see them take the children to school and carry their books and slates for them without relinquishing their military garb. They may even be seen with the tot's provision-basket and his toys in their hands. It is even more amusing to see him as one of a party of nurses and small children who are wildly fond of their soldier-nurse. A Spanish family regretfully parts with their "asistente" when, at the end of two years and six months, he receives his discharge in a small tin case, the common solder's "baton," which takes him back to his native village.

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

March.

MEAT.—Beef, mutton, ham, kidneys, liver, venison, sausage, veal.

GAME AND POULTRY.—Grouse, hare, pigeon, chicken, duck, turkey, goose, snipe.

FISH.—Bass, cod, eels, carp, catfish, flounders, halibut, herring, lobsters, mackerel, mussels, oysters, perch, pike, rock-fish, salmon, smelt, white-fish, trout.

VEGETABLES. — Artichokes, beans, carrots, celery, garlic, lettuce, onions, parsley, parsnips, potatoes, shallots, spinach, turnips, watercress.

FRUITS.—Apples, bananas, oranges.

PRACTICAL RECIPES.

VEAL PUDDING.—Cut into small slices some cooked lean, veal and some ham and season them highly with chopped parsley, sweet herbs, pepper, salt and a little grated lemon rind. Line a pudding dish with a thick crust made with suet, fill up with the meat, pour some gravy over it, cover with a crust, pinch the edges well together, cover with a cloth and tie firmly, put it into boiling water and boil until done.

MACARONI OMELET.—Boil some macaroni and when done cut into pieces of an inch each, season highly with butter, parmesan cheese and tomato sauce, stew them together for a moment. Make an omelet of the size desired, and when it is set fill the centre with the macaroni.

CURRIED BEEF.—Cut some cooked roast beef into thin slices ; slice and fry one onion in butter ; mix smooth a large tablespoonful of curry powder, with a tablespooful of butter, a cup of beef gravy and salt and pepper. Put this to the fried onions, add the beef and cook gently for a few minutes. Serve very hot.

PEACH FRITTERS.—Make a good batter, allowing five eggs to a pint of milk. Take some fresh peaches—or canned ones if out of season—sprinkle them well with sugar, dip a piece in the batter and fry in boiling lard until it is a fine brown. Drain and serve with powdered sugar.

BROWNED SWEET POTATOES.—Boil some fine sweet potatoes until done, peel and split them ; put them in a flat pan and baste them well with some water and melted sugar ; put tiny bits of butter over them and bake until they are a rich brown.

ITALIAN SAUCE FOR FISH.—Put some lemon, thyme, parsley, and mushrooms, shred small and fine into a stewpan, with a little butter and a clove of garlic ; set it on a moderate fire, and as soon as the butter begins to fry, pour in a little consomme, and let it stew till pretty thick, then take out the garlic, and add some butter sauce and a little lemon juice.

LAMB CUTLETS.—Have your butcher cut some cutlets from the best end of a neck of lamb two or three inches from the top of the bones. Get him then to shape the cutlets for you. Dip them in egg and crumbs and fry them. Make a bed of green peas in the centre of your meat dish, pile the meat around it and serve, or else serve with tomato sauce.

GINGER SNAPS.—Two cups molasses, one good cup butter, one and a half tablespoonful of ginger, one teaspoonful cinnamon, a little salt. Heat all these together so that they may become thoroughly incorporated. Mix half a teaspoon baking soda in a very little warm water. When the molasses has cooled pour this into it. Beat up and pour onto a quart of flour. Mix well, and add more flour as needed. Roll out very thin, and bake for a moment in a hot oven. Use as little flour as possible, but the thinner they are the more dainty.

NUTRITION.

POSSIBLE TEMPORARY SUSPENSION OF THE VITAL FORCES.

A professional "faster," an Italian named Succi, has lately performed the feat of obstaining from food for a period of forty-five days, taking nothing into his stomach but fresh water and a secret "elixir" which appears to be simply a preparation of opium. He kept up his strength remarkably well under the ordeal, taking a horse-back ride on the fifteenth day of his fast and daily exercise thereafter. At the beginning of his fast Succi weighed 147¼ pounds, and at the completion 104¾ pounds—a loss of 42½ pounds, or less than a pound a day. He was constantly watched by a committee of thirteen physicians, and there is little doubt but that the fast was a genuine one. It will be remembered that about ten years ago one Dr. Tanner created a great sensation by abstaining from food for forty days ; but Succi has far exceeded this, although the popular taste has become somewhat weary of professional fasters, and comparatively little interest was excited by this really wonderful test of endurance. Although such experiments are not of the slightest use, and only serve to give a little sensational notoriety to those undertaking them, the fact that the nutritive functions of the human organism can be supended or modified, so that life can be supported without nourishment from outside sources, is of a certain physiological interest. Succi's feat is not a unique one, although very exceptional. The East Indian fakirs and other Oriental religious devotees claim to have the same power, although in the absence of definite proof of their genuineness it has generally been supposed that their alleged fasts were fraudulent ones. The phenomenon of hibernation in the animal world bears a certain analogy to these facts. A bear, after living sumptuously all the fall, will retire to his den on the approach of winter and pass the cold weather in a torpid state, without food, the sluggish vital processes being kept up in the animal's body. At the approach of spring, with a fresh supply of food in the woods, Bruin awakens from his long sleep and reappears on the scene "as thin as a rail," but in good health and spirits and ready to make up for lost time. In the case of Succi, Tanner, and other fasters, all the vital processes seem to be carried on as usual—there is no abnormal sleep or torpor—but it is very probable that their endurance is due to the same cause which supports a hibernating animal during the winter—the power of the body to draw upon the supplies of oxidizable material previously stored up in its tissues, to the exclusion of that from outside sources. The stories of certain East Indian jugglers who have allowed themselves to be shut up in a tomb for several weeks, and have afterwards been resuscitated, are recalled to mind in this connection ; and, as some of them seem to be fairly well authenticated, it is possible that this power may be due to the same abnormal bodily activity which supported Succi through the dreary weeks of his voluntary starvation. The human body is analogous to a steam engine ; both are kept in motion by the oxidation of carbon and hydrogen, and if the supply is cut off the one will die and the other cease to move ; but, as the fires under the boiler may be "banked," and just enough combustion permitted to develop a slight amount of steam pressure, so it is not impossible that the mysterious vital forces may—in some exceptional cases—be held in abeyance, and the small amount of energy necessary for their perpetuation be obtained, for a greater or less time, by the oxiditation of the bodily tissues themselves ; or, in other words, a man may feed upon his own body—a form of cannibalism which is unobjectionable from ethical grounds, although in direct violation of all physiological laws.

CLEANING CITY STREETS.

HOW THE WORK IS SYSTEMATIZED IN PARIS.

It takes an army, almost, to clean, scrub, sweep and sprinkle the streets of Paris. The army of street-sweepers is composed of embrigades and voluntaries. The former are considered as cantonniers, or road-laborers, and are employed the whole day long. All the cares of public street-cleaning fall to their lot, and they do the supplementary sweeping, washing out of gutters, cleaning of public stations, market-houses, etc. The voluntaries are voluntary workers. They are enrolled in brigades. There are about 130 of these brigades, and each comprises a chief, a foreman and about thirty men and women sweepers, the greater part of whom only work in the early morning, either in the cleansing of streets, properly, so called, or in assisting to load the wagons that carry away the refuse. They leave off work at 10 o'clock in the morning, and this is called working by the half-day. The labor begins at 3 o'clock in summer and 4 in winter, and when they work a whole day they finish at 4 o'clock—that is to say, after laboring for twelve hours. The complete service of sweepers comprises thirty-seven chiefs or overseers, 152 foremen, 654 ordinary cantonniers, 2,000 auxiliary sweepers, and 850 men and women who do only half a day's work. Overseers, foremen and ordinary cantonniers are paid monthly—the first 150 to 160

francs, the second 120 to 125 francs, the third 106 francs, and the sweepers are paid, for the work they do, from 64 to 75 cents a day, and 43 to 50 cents for half a day. Out of these small emoluments each cantonnier, no matter what his grade or class, has to pay monthly into a saving bank the sum of five francs, a reserve fund which is remitted to them, however, immediately they leave the service, or it is paid to their widow, children or other heirs if they die in the harness. A further reduction of two francs for the society of mutual succor is made monthly from the wages of those employed in the Bois de Boulogne and in the Bois de Vincennes. The implements used are of two sorts, according to the sex of workers and place of combat. Women sweepers handle the ordinary birch broom or what is known as the "piazzava," made of a sort of vegetable hair of great suppleness and much resistance. Road-scrapers are also larger brooms with which to push the water and mud toward the sewer-opening, and experienced drivers are supplied with sweeping machines. These scrapers and brooms are worth describing, particularly those used along the gutters and on the bitumen and wooden pavements. They have india-rubber bands. This produces perfect adherence, and there is no space between implement and ground that it is to be cleaned, so that water and mud are easily pushed into the sewer. Mechanical sweepers are a cleaning-machine of recent invention, and they are endowed with great power. The annual appropriation for this cleaning and sprinkling, as well as the clearing away of snow and ice, is close to 6,815,000 francs. The sweeping service calls for a total of 5,750,000, and the sprinkling department takes the rest—rather high figures. The city raises its share of this fund by a sweeping tax imposed on house-owners. By the terms of the law, the tariff of this tax has to be revised every five years. The last revised tariff was applied in 1889, and it will remain in force until 1893. It produces 2,956,000 francs, to which must be added the amounts owed by the State and Seine Department as their share of the cost of sweeping. The house-owner tax is 14 cents, 10 cents and 4 cents, according to circumstances. Some only pay four centimes—less than a cent—for each superficial meter of land, the maintenance of which is incumbent. As for the sprinkling, that costs 1,000,000 francs annually, the amount being made up as follows: Carts, 500,000 francs; wages, 300,000; purchase of material, etc., 160,000; sundry expenses, 50,000.

THE COLUMBIAN CYCLOPEDIA.

The Columbian Cyclopedia is the new name and new form of what has heretofore been known as Alden's Manifold Cyclopedia, and which has won great popularity by its high merit, combined with its amazingly low price. The Columbian Cyclopedia will comprise 32 volumes, of about 800 pages each (the Manifold was 40 volumes, of 640 pages each), being about equal in size to Appleton's Cyclopedia, and about 50 per cent. larger than Johnson's. The entire set will contain about 7,000 illustrations. It is very handsomely printed and bound, and, like the Manifold, is almost fabulously cheap, the entire set being furnished in cloth binding for $25,00, with easy instalment terms to those who want them. Of course, subscriptions to the Manifold will be completed in uniform style with the early volumes delivered. Whoever is interested in cyclopedias will do well to secure (free) specimen pages of the Columbian, which may be had by addressing THE COLUMBIAN PUBLISHING CO., 393 Pearl Street, New York, or 242 Wabash Avenue, Chicago.

BRASS BLACKING.—To make a dead-black on brass, for microscopes, etc., mix one ounce of nitrate of silver in a dish with 20 ounces of distilled water. In another dish mix one ounce of nitrate of copper with 20 ounces of distilled water. Mix the two solutions together, dip the brass in the liquid, remove the brass, and heat in an oven until the desired degree of black is obtained.

FRUIT CURE.—Dr. John Hunter was an enthusiastic advocate for the apple cure for gout. Instead of wine and rare roast beef, he enjoined upon his gouty patients the importance of the free use of apples.

REMARKABLE RING.—A lady of Walnut Street Church has presented her pastor with a most remarkable ring, says the Louisville *Western Recorder*. It is probably the only one of the kind in the world. It contains twelve precious stones, the same as were in the Aaronic high priest's breastplate, and arranged in the same order—sardius, emerald, ligure, beryl, topaz, sapphire, agate, onyx, carbuncle, diamond, amethyst and jasper.

BRASS POLISH.—The brass articles that are fashionable just now require careful attention to keep them clean and bright. If not lacquered, rub sweet oil on the flannel, finally polish with a chamois. If lacquered, wash with a soft brush in warm water and soap, wipe well, and set before the fire until perfectly dry. Bronzes are cleaned with sweet oil rubbed on with a brush, then rubbed off with a second brush, and polished with a chamois. Another plan is to plunge them into boiling water until very hot, then wash with flannel and yellow soap, drying carefully with soft rags. If soap and water prove ineffectual, try beeswax dissolved in turpentine, rubbed on and off with clean, soft rags.

CORN SOAP.—Soap of a very good quality is now reported being manufactured from corn. Experiments have shown that a bushel of corn will make two hundred pounds of soap. There is probably no cereal which can be put to more general use than this one, says the *San Francisco Grocer*. It is a favorable table dish, corn starch being one of its valuable productions and it is often used in making whiskey. Heretofore it may be said to have been used indirectly in the manufacture of soap, being a principal agent in forming the fat on ham and bacon, but never until lately was it known that corn in its natural state possessed some of the most important requisites for soap making. Now that this new use has been discovered, the corn fields need not necessarily be more numerous, in order to satisfy the increased demand for the cereal, but the cultivation of this grain will certainly be none the less profitable in consequence.

Buffalo Lithia Water, Spring No. 2, in Bright's Disease, Gout, Stone in the Bladder, and Diseases Generally of Uric Acid Diathesis, Etc., Etc.

DR. WM. A. HAMMOND, of Washington, D. C., Surgeon General U. S. Army (retired), Professor of Diseases of the Mind and Nervous System in the University of New York, etc.

"I have for some time made use of the BUFFALO LITHIA WATER in cases of AFFECTIONS of the NERVOUS SYSTEM, complicated with BRIGHT'S DISEASE OF THE KIDNEYS or with a GOUTY DIATHESIS. *The results have been eminently satisfactory.* Lithia has for many years *been a favorite with me in like cases, but the* BUFFALO WATER CERTAINLY ACTS BETTER THAN ANY EXTEMPORANEOUS SOLUTION of THE LITHIA SALTS, and is, moreover, better borne by the stomach. I also often prescribe it in those cases of CEREBRAL HYPERÆMIA resulting from OVER MENTAL WORK—in which the condition called NERVOUS DYSPEPSIA exists—*and generally with* MARKED BENEFIT."

DR. WM. B. TOWLES, Professor of Anatomy and Materia Medica, in the Medical Department of the University of Virginia.

"BUFFALO LITHIA SPRINGS, No. 2, belongs to the ALKALINE or, *perhaps, to the* ALKALINE SALINE Class, *for it has proved far more efficacious in many diseased conditions than any of the simple* ALKALINE waters.

"*I feel no hesitancy whatever in saying that in* GOUT, RHEUMATIC GOUT, RHEUMATISM, STONE *in the* BLADDER, and in all diseases of URIC ACID DIATHESIS, *I know of no remedy at all comparable to it.*

"*Its effects are marked in causing a disappearance of* ALBUMEN *from the urine. In a* single case of BRIGHT'S DISEASE *of the* KIDNEYS, I witnessed *decided beneficial results from its use, and from its action in this case I should have great confidence in it as a remedy in certain stages of this disease.* In DYSPEPSIA, especially that form of it in which there *is an excessive production of* ACID *during the process of nutrition*, in some of the PECULIAR AFFECTIONS *of* WOMEN, notably in SUPPRESSION of the MENSES, and in CHRONIC MALARIAL POISONING, etc., I have found it highly efficacious."

DR. G. HALSTEAD BOYLAND, late Professor of Surgery, Baltimore Medical College, late Surgeon French Army (Decorated), Member Baltimore Academy of Medicine, Member of American Medical Association.

"In BRIGHT'S DISEASE of the KIDNEYS, ACUTE or CHRONIC, BUFFALO LITHIA WATER, Spring No. 2, is, in my experience, *without a rival*, whether in the PARENCHYMATOUS form or INTERSTITIAL NEPHRITIS. In cases in which the ALBUMEN in the URINE reached as high as 50 per cent., I have known it under a course of this water gradually diminish and finally disappear, at the same time other alarming symptoms were relieved and the sufferers restored to health.

"In STONE in the BLADDER of the RED LITHIC ACID and the WHITE PHOSPHATIC DEPOSIT, the SOLVENT power of this water is *unmistakable.*"

Water in cases of one dozen half gallon bottles, $5.00 f. o. b. here.

THOS. F. GOODE, Proprietor, BUFFALO LITHIA SPRINGS, VA.

TO READ THE TONGUE.—The perfectly healthy tongue is clean, moist, lies loosely in the mouth, is round at the edge and has no prominent papillæ. The tongue may be furred from local causes, or from sympathy with the stomach, intestines or liver. The dry tongue occurs most frequently in fever, and indicates a nervous prostration or depression. A white tongue is diagnostic simply of the feverish condition with perhaps a sour stomach. When it is moist and yellowish brown it shows disorded digestion. Dry and brown indicate a low state of the system, possibly typhoid. When the tongue is dry and red and smooth, look out for inflammation, gastric or intestinal. When the papillæ on the end of the tongue are raised and very red we call it a strawberry tongue, and that means scarlet fever. Sharp, pointed red tongue will hint of brain irritation or inflammation, and a yellow coating indicates liver derangement. When so much can be gained from an examination of the tongue, how important is it that the youngest child should be taught to put it out so that it can be visible to the uttermost in the throat! —Dr. Julia Holmes Smith, in *New York Ledger*.

CLEVELAND'S SUPERIOR Baking Powder.

The Official Reports of the
United States Government, 1889,
Canadian Government, 1889,
New Jersey Commission, 1889,
Ohio Food Commission, 1887,
prove that Cleveland's is

THE STRONGEST

of all the pure* cream of tartar baking powders.

*Ammonia or alum powders, whatever their strength, should be avoided as injurious.

25 CTS. PISO'S CURE FOR CONSUMPTION 25 CTS.
CURES WHERE ALL ELSE FAILS.
Best Cough Syrup. Tastes good. Use in time. Sold by druggists.

Fine Table Wines

From our Celebrated Orleans Vineyard.

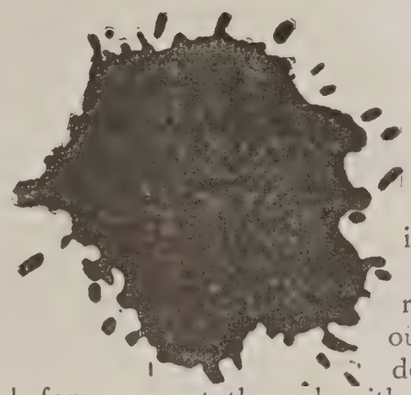
Arpad Haraszthy & Co.

Producers of the

ECLIPSE CHAMPAGNE,

530 Washington St. SAN FRANCISCO.

GENERAL AGENCIES:
NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOSEPH R. PEEBLES' SONS CO., 73 West Fourth Street.
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.



The Dearest Spot on Earth

is the spot that's washed out *without Pearline*. It costs in clothes, in the rubbing and scrubbing that wears them out quickly; it takes twice the time, and double the labor. It's expensive washing before you get through with it—and the cost comes home to *you*, no matter who does the work.

Pearline saves money by saving work, wear, and time. It hurts nothing; washes and cleans everything. It costs no more than common soap, but it does more. It's cheap to begin with—but it's cheapest in the end.

Beware of imitations of PEARLINE which are being peddled from door to door.
196 JAMES PYLE, New York.

A LARGE AND VALUABLE

Cook Book Free



We are enabled to offer our readers a most attractive combination, by which all may obtain a copy of the "Modern Cook Book" absolutely free. This handsome and valuable Cook Book has

320 Pages, Over 1,200 Recipes and Hundreds of Illustrations.

The recipes are the choicest selections from 20,000 that were received from practical housewives living in all parts of the United States, to which were added hundreds of the newest, best and most practical recipes of this progressive age, all of it set in new and large type, and the whole book handsomely illustrated.

IT HAS A BEAUTIFUL, ILLUMINATED COVER.

It is an elegant and admirably arranged volume of recipes for practical, everyday use. Among its points of excellence are the following:

Practical Suggestions to Young Housekeepers, Necessary Kitchen Utensils, Suggestions and Recipes for Soups, Fish, Poultry, Game, Meats, Salads, Sauces, Catsups and Relishes, Breakfast and Tea Dishes, Vegetables, Bread, Biscuit, Pies, Puddings, Cakes, Custards, Desserts, Cookies, Fritters, etc. Also for Preserves, Candies and Beverages; Cookery for the Sick, Bills of Fare for Family Dinners, Holiday Dinners, etc. A Table of Weights and Measures; Chapters on the Various Departments of Household Management and Work.

IT WOULD BE CHEAP AT $1,

As it is the Latest, Best and Most Practical Cook Book Published, More Nearly Meeting the Wants of American Homes than any other.

Any person accepting our offer will receive this paper one year, and also that charming home journal, the Ladies Home Companion, one year, together with the Cook Book, all mailed, postpaid, for less than the regular price of the two papers alone.

The Cook Book is offered absolutely free to induce thousands of our readers to become acquainted with the Ladies Home Companion, the publishers looking to the future for their profit, as they believe you will always want the Ladies Home Companion if you try it one year. Do not lose this opportunity to get the newest and best Cook Book free.

THE LADIES HOME COMPANION is a large and popular 16-page journal, published **twice a month**, and gives information about those things which ladies particularly wish to know, and is mostly written by ladies. **Original or Selected Stories** by eminent authors are found in each issue. A special feature is the variety of departments, each of which is conducted by a special editor. It gives the latest **Fashions**, arranged for practical use; timely hints to **Housekeepers**; cheering and helpful talks with **Mothers**; valuable information for lovers of **Flowers**; a pretty and pleasant page for pretty and pleasant children. All handsomely illustrated. It is not an ultra fashion paper, but a journal for the home circle, full of common-sense ideas and suggestions for home happiness and comfort.

OUR OFFER Send us $1.00 and you will receive **The American Analyst** one year, and also the **Ladies Home Companion** one year (24 numbers). And every one accepting this offer will also receive the above Cook Book, postpaid.

This offer is extended to **all** our subscribers. Subscribers whose subscriptions have not expired, or those recently renewed, are privileged to accept this GREAT OFFER, in which case their term of subscription will be extended one year.

Address THE AMERICAN ANALYST, 19 Park Place, New York.

THE N. Y. HAY EXCHANGE BULLETIN.

OFFICIAL REPORT OF THE HAY AND STRAW MARKET AT NEW YORK.

COMMISSION SALESMEN.

NOTICE.

These names are arranged alphabetically.

WM. AFFLECK & CO.,
Commission Merchants in
HAY AND STRAW,
Office No. 5,
N. Y. Hay Exchange Building.

J. ALSDORF,
Commission Dealer in
HAY AND STRAW,
33d Street and 11th Ave.,
NEW YORK.

E. A. DECKER. F. W. TOMPKINS.
DECKER & TOMPKINS,
Commission Merchants in
HAY, STRAW, GRAIN,
Office: 16 New York Hay Exchange Building.

L. S. DILLENBACK. T. O. PECK.
DILLENBACK & PECK,
MAIN OFFICE:
Room O, N. Y. HAY EXCHANGE, N. Y. City.
STOREHOUSE AND BRANCH OFFICE:
101, 103 and 105 North 5th St.,
and 152 and 154 Berry St.,
Palmer's Dock. Brooklyn, E. D.

EDWIN B. DUSENBERRY,
COMMISSION MERCHANT,
And Wholesale Dealer in
HAY, STRAW AND GRAIN.
No. 1, N. Y. Hay Exchange, New York.

THOS. FONDA & CO.,
Commission Merchants
And Dealers in Hay, Straw, Grain and Country Produce,
13 & 14 N. Y. Hay Exchange Building.

N. A. FULLER,
COMMISSION MERCHANT IN
HAY AND STRAW,
33d Street and 11th Ave.,
NEW YORK.

J. H. Hubbel. Oscar Kent.
HUBBEL & KENT,
HAY AND STRAW
COMMISSION MERCHANTS,
New York Hay Exchange Building.
Personal attention guaranteed all consignments
Correspondence solicited.

THEO. P. HUFFMAN & CO.,
COMMISSION MERCHANTS
In Hay, Straw, Grain, Feed, &c.,
648 & 650 West 34th Street,
Bet. 11th & 12th Aves., N. Y.

The N. Y. Hay Exchange is located at 601 W. 33d St., corner 11th Avenue.

Only the cards of members of the N. Y. Hay Exchange appear on this page.

RULES FOR GRADING HAY AND STRAW

As Adopted by the N. Y. Hay Exchange.

CHOICE OR PRIME HAY—Shall be pure timothy, properly cured, bright, natural color, sound and well baled. No. 1—Shall be timothy, not more than one-eighth (⅛) mixed with "red top" properly cured, bright natural color, sound and well baled. No. 2—Shall be timothy, not more than one-quarter (¼) mixed with red top and blue grass, properly cured, good color, sound and well baled. No. 3—Shall include all timothy not good enough for No. 2, proportionately mixed with blue grass, red top, and clover, sound and well baled. SHIPPING—Shall include all hay not good enough for other grades, and may be natural meadow, free from wild or bog grass, and must not contain over one-third (⅓) clover, sound and well baled. CLOVER MIXED—Shall include all hay containing not over two-third (⅔) clover, and one-third (⅓) timothy, properly cured, sound, and well baled. CLOVER—Shall be medium grown, properly cured, good color, sound, and well baled. NO GRADE OR REJECTED HAY—Shall include all hay badly cured, musty, stained, or in any way unsound.

No. 1. RYE STRAW—Shall be clean, bright, long Rye, in bundles, sound, well and securely baled. No. 2—Shall be long Rye, in bundles, sound, well and securely baled. SHORT RYE—Shall be clean, not bundled, sound, well and securely baled. OAT STRAW—Shall be clean, bright, sound, well and securely baled.

In the New York market bale-wood is weighed in without tare. In all other markets it is deducted.

These quotations for choice, No. 1 and No. 2 hay are for large bales. 5c. per cwt. less when in perpetual press bales.

The New York quotations are per cwt. At other points, per ton.

NEW YORK, March 23, 1891.

The following are the market prices to-day at New York.

	Large Bales.	Small Bales.
Fancy Hay	60c @	55c @
No. 1	55 @ 60	50 @
No. 2	50 @	45 @ 50
No. 3 and Shipping	40 @ 45	40 @ 45
Clover Mixed	45 @ 50	40 @ 45
Clover	45 @	@
Long Rye Straw	80 @ 85	@
No. 2 "		
Oat Straw	35 @	
Wheat Straw	@	

Receipts week ending March 21, as follows:

Via N. Y. Central	150 cars.
" West Shore	109 "
Other roads by Lighter, 34th Street	50 "
Total	309 cars.

The market rules steady and firm, and has since our last issue. A choice car of hay would sell to-day at 70 cents, but it would take but few cars to break the price, there being so much No. 1 Hay used in its place. There is little stock that remains unsold, and shipments started now ought to meet with above quotations. There is every prospect of increased supply soon in all grades. Rye Straw plenty and dull at quotations. Perpetual pressed Hay not plenty, and moves as quickly as large bales.

H. B. Jenkins. F. S. Williams.
JENKINS & WILLIAMS.
COMMISSION MERCHANTS IN
HAY, STRAW AND GRAIN,
HAY EXCHANGE.

JOHN KERWIN & SON,
DIRECT RECEIVERS OF
HAY, GRAIN and GENERAL PRODUCE
DEPOT AND STOREHOUSES,
Palmer's Dock. Nos. 97 & 99 North Fifth Street.
BROOKLYN, N. Y.
SHIPPING ADDRESS, PALMER'S DOCK, BROOKLYN, N.Y
West Shore R. R., N. Y. C. & H. R. R. R., N. Y. L. E. & W. R. R., Pennsylvania R. R., D. L. & W R. R., Lehigh Valley R. R., and connections.

W. J. OVEROCKER. PERRY HATCH.
OVEROCKER & HATCH,
Commission Merchants in
HAY, STRAW AND GRAIN,
33d Street & 11th Avenue, New York.
References: West Side Bank, New York City; Exchange Bank, Holly, N. Y.

Gilbert Plowman, NEW YORK. Spencer Billington, FORT HUNTER, N. Y.
PLOWMAN & BILLINGTON
COMMISSION MERCHANTS,
HAY, STRAW, GRAIN, &c.
No. 15 N. Y. Hay Exchange,
33d St. & 11th Ave., NEW YORK.

JAMES ROZELL & SON,
Commission Merchants and Wholesale Dealers in
HAY, STRAW, GRAIN
AND
COUNTRY PRODUCE.
N. Y. Hay Exchange, New York.

SKINNER, BLOOM & CO.,
Successors to Rogers, Skinner & Co.,
COMMISSION MERCHANTS
And Dealers in
Grain, Flour, Hay, Feed, Meal, &c.,
74 CORTLANDT STREET, - NEW YORK.
Barge GYPSIE, Foot Bridge St., Brooklyn.

H. SLINGERLAND,
Barges MERCHANT and HARVEST QUEEN
Foot of West 11th Street,
HAY AND STRAW.
Also, 33d and 35th Streets, and all Railroad terminals. Special facilities for lighterage free goods.

CHARLES F. SWAN,
Commission Merchant in
HAY, STRAW & GRAIN,
At all the Railroad Terminals
in New York, Brooklyn, Jersey City, &c.
MAIN OFFICE,
108 BROAD ST., NEW YORK.

TITUS, WELLS & WILLETS,
Commission Merchants and Dealers in
HAY AND STRAW,
133 Roosevelt St.,
NEW YORK.

G. E. Van Vorst. James M. Hillery.
VAN VORST & CO.,
COMMISSION MERCHANTS,
HAY, STRAW AND GRAIN
N. Y. Hay Exchange, 33d St., & 11th Ave.
562 & 564 West 34th St., NEW YORK.

NOTICE.

These names are arranged alphabetically.

HOSMER, CRAMPTON & HAMMOND,

NO. 43 COMMERCIAL STREET,

BOSTON.

COMMISSION MERCHANTS,

HAY, STRAW, FLOUR & GRAIN.

E. B. HOSMER, G. W. CRAMPTON, BENJAMIN HAMMOND, A. L. ROBINSON.

BOSTON HAY AND STRAW MARKET.

Hay, choice to fancy, in large bales	$13.00 to $14.50
Hay, choice to fancy, perpetual pressed bales	12.50 to 13.00
Hay, fair to good	11.00 to 12.00
Hay, poor to ordinary	9.00 to 11.00
Hay, Clover and Clover mixed	9.00 to 11.00
Hay, swale	8.00 to 8.50
Straw, Rye, good to prime	17.00 to 17.50
Straw, Oat	8.00 to

BOSTON, March 21st, 1891.

Receipts for the week are 156 cars of Hay and 16 cars of Straw; corresponding week last year, 250 cars of Hay and 10 cars of Straw. Receipts of hay continue small and market is in better condition than for a long time. There are still quite large stocks of hay here unsold, but they are much smaller than a few weeks ago, and are being slowly reduced. We do not look for high prices, but expect a good market for the next few weeks, and think it a favorable time to make shipments. Rye Straw is steady at quotations. Very little demand for Oat Straw or Swale Hay.



H. F. WILSON,
WIRE BALE TIES,
458 WEST 38th STREET, New York.

HAMMOND'S
CELEBRATED
Calumet Oleomargarine

Strictly pure, cheap and healthful.
Ask your grocer for it.
Put up in packages of all sizes, also prints and rolls.

G. H. HAMMOND CO.,
607 to 615 THE ROOKERY,
CHICAGO.

Also offices at Boston, South Omaha, Neb., and Hammond, Ind.

We can save you Fifty Dollars when you Build. See



A complete set of Plans to build from, simply state about price of dwelling desired. 25 cts. in stamps. Our book "Beautiful Homes." 25 cts. Our monthly book "The National Builder," 25 cts. Address
The National Builder, Adams Exp. Bldg., Chicago, Ill.

SWIFT'S
CHOICE
Chicago Dressed Beef
AND
MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,
UNION STOCK YARDS,
CHICAGO, ILLS.

PUBLICATIONS OF THE
ANALYST PUBLISHING CO.

THE AMERICAN ANALYST.
Weekly. Every Thursday. $1 per year.

THE ROOFER, TINNER AND SHEET-IRON WORKER.
Monthly. 15th each month, $1 per year.

THE LEATHER MANUFACTURER.
Monthly. 1st each month. $3 per year.

Reliable agents and representatives wanted everywhere on liberal terms. Address

ANALYST PUBLISHING CO.
19 PARK PLACE, NEW YORK.

NATURAL MINERAL PURGATIVE WATER.
From the Springs of
VILLACABRAS.
Prescribed by the Highest Medical Authorities.

Stronger effects than any other under smaller volume. No smell—no repulsive taste—no after-constipation—no gripes. As a daily laxative it can be taken either pure or mixed with milk, tea or broth.

Sold by all Good Druggists.

HARTSHORN'S SELF-ACTING SHADE ROLLERS

NOTICE SCRIPT NAME OF Stewart Hartshorn ON LABEL, AND GET THE GENUINE

HARTSHORN



A HIGH-GRADE PIANO

AT A VERY MODERATE PRICE.

NEW DESIGNS. FANCY WOODS.

Terms Easy. + Monthly Instalments.

TWO, THREE AND FOUR PEDALS.

Catalogues, Prices, Terms, Etc., sent to any address.

EVERY PIANO WARRANTED 5 YEARS.

(Mention this Paper.)

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,

HOWARD STREET, BOSTON, MASS.

GOLD MEDAL, PARIS, 1878.



W. BAKER & Co.'s Breakfast Cocoa

from which the excess of oil has been removed,

Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

"BILLET"

are

Carefully Selected French Sardines, Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.

MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.

STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

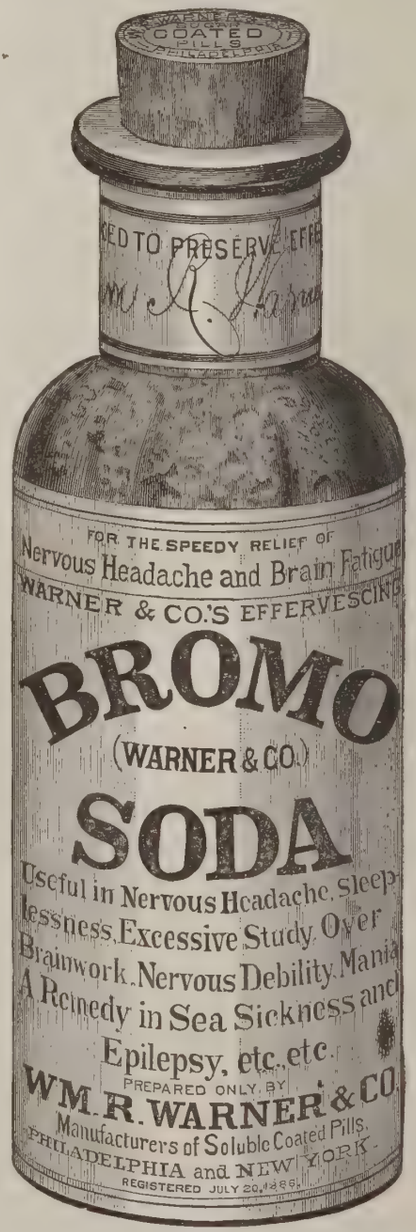
FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

BROMO SODA.

Useful in Nervous Headache, Sleeplessness, Excessive Study, Over Brainwork, Nervous Debility, Mania, Etc.

DOSE—A heaping teaspoonful in half a glass of water, to be repeated once after an interval of thirty minutes, if necessary. Each teaspoonful contains 30 grs. BROMIDE SODIUM and 1 gr. CAFFEIN,



SUPPLIED BY ALL DRUGGISTS

Ask for (Bromo-Soda, Warner & Co.) and take no other "Bromo."

THE ORIGINAL AND GENUINE
(WORCESTERSHIRE SAUCE).



LEA & PERRINS' SAUCE

In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—

Lea & Perrins

Beware of Imitations; see that you get Lea & Perrins'

For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS. NEW YORK.

RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,
184 Greenwich St., N. Y.

BLAIR'S PILLS.



Great English Remedy for GOUT, RHEUMATISM and KIDNEY COMPLAINTS.

SURE, PROMPT and EFFECTIVE.

Large Box, 34; Small, 14 Pills.

At all Druggists, and

224 WILLIAM STREET, NEW YORK.

Pure LAGER BEER,

"IMPERIAL" and "CULMBACHER"

Brewed & Bottled SPECIALLY FOR HOTELS, CLUBS AND PRIVATE FAMILIES

BY

Beadleston & Woerz

291 W. 10th St. New York.

Orders by Postal Card promptly attended to.



C-U-R-E-S

DIARRHŒA, DYSENTERY,

MALARIA,

all ailments of the bowels. Is an anti-dyspeptic, and a **DELICIOUS INVIGORATIVE.** Leading Physicians prescribe it for **ADULTS AND CHILDREN.** *FOR SALE* by Druggists and dealers.

RHEINSTROM BROS., DISTILLERS OF FINE LIQUEURS,
54, 56, 58, 60, 62 E. 3rd STREET, CINCINNATI, O.

ESTABLISHED IN LONDON, 1831.

DEAN'S PATENT Ardenter Mustard



W. G. DEAN & SON,
361 & 363 WASHINGTON STREET; 84, 86, & 88
NORTH MOORE STREET, N.Y.

We shall be glad to supply our readers with any periodical published at club rates.

Send us a postal naming periodical and we will quote you prices.

ANALYST PUBLISHING CO.,
19 Park Place,
New York.

Don't kick



because your business is bad, but advertise If you don't know how to, write to us and we will tell you.

We will prepare your advertisement or give you advice and assistance to aid you in preparing it yourself. We will have the advertisement set in type and procure illustrations if any are needed. When a satisfactory advertisement has been produced we will furnish proofs and an electrotyped pattern to be used in duplicating the advertisement if the display or illustration make an electrotype desirable.

Address GEO. P. ROWELL & CO.,
Newspaper Advertising Bureau,
10 Spruce St., N. Y.

DR. PRICE'S CREAM Baking Powder.

Most Perfect Made

A Pure Cream of Tartar Powder—
Superior to every other known.
Used in Millions of Homes—40 Years the Standard.
Delicious Cake and Pastry, Light Flaky Biscuit, Griddle Cakes
Palatable and Wholesome.
No other baking powder does such work.

THE GREAT AMERICAN TEA COMPANY

LADIES GET UP ORDERS. Entire New Departure. A HANDSOME PRESENT TO EVERY SUBSCRIBER.

THE GREATEST INDUCEMENTS
EVER KNOWN TO INTRODUCE OUR NEW GOODS.

If you enjoy a cup of **Delicious Tea** send in your orders. 3½ lbs. Fine Tea by mail on receipt of $2 and this "ad". Beautiful premiums given away with $5 orders and upwards. The **most extraordinary bargains** ever offered, during the next thirty days. China Tea Sets and Lamps with $10, $15 and $20 orders to introduce our excellent **New Crop Teas.** Formosa and Amoy, Oolong, Congou, English Breakfast, Japan, Imperial, Young Hyson, Gunpowder, Sun Sun Chop and Mixed. Good mixed teas 20c. per lb. Headquarters in United States for Fine Teas. One pound of our tea will go farther than three pounds of trash. Thirty years' national reputation for selling **Pure Goods Only.**

THE GREAT AMERICAN TEA COMPANY,
P. O. BOX 289. 31 and 33 Vesey Street, New York.

Tabasco Pepper Sauce
OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced, by connoisseurs, to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY,
NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

SUBSCRIBE
FOR THE
AMERICAN
ANALYST.
$1.00 Per Year.

GLENN'S SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,
C. N. CRITTENTON,
115 FULTON STREET,
NEW YORK.



THE CENTURY DICTIONARY comes nearer to being a complete catalogue of the English language than any dictionary ever published. But it is not merely a dictionary: it is an encyclopedia of common things as well. It has been ten years in preparation. The leading scholars of the country have contributed to its pages. It is the latest dictionary and it ought to be, and is, the best.

A large descriptive pamphlet containing full-size sample pages, etc., will be mailed to any one sending five 2-cent stamps to
THE CENTURY CO., 33 East 17th St, New York.

Be progressive and keep abreast of the times. Avoid dyspepsia by using **Lard Compound** and **Cottolene,** a substitute for lard.

The highest medical authorities pronounce them healthful; and expert cooks commend them.

Our **Clairette** brand of cotton oil soap is the purest and best laundry soap in the market; as pleasant to the hands as genuine castile.

N. K. FAIRBANK & CO.,
CHICAGO AND ST. LOUIS.

A BUSINESS BENEFIT.

ADVANTAGES TO ADVERTISERS OFFERED BY THE "AMERICAN ANALYST."

It has not the limitations of a daily paper. No one reads yesterday's paper. A monthly lives at least a month, while a weekly is fresh four times a month, and its audience is not limited by geographical lines, but the circulation is all over the United States and Canada.

It contains matters of interest to everyone, especially the ladies of the household, and is, therefore, sure of a careful perusal. Our audiences are intelligent and of the better classes, who have money to spend, and any well worded advertisement in our columns, giving real information, will receive a careful perusal.

Our rates are as low as our circulation affords. Large circulation and original matter cost money, and those advertisers who desire to realize these benefits must expect to pay reasonably for them.

Advertisements in our columns are permanent. Most of our subscribers bind their numbers.

Our advertisements are set up in an attractive form, sure to call the attention of the reader.

Anything that our readers want, or for which a demand is to be created, not wholly of a local nature, will pay to advertise with us.

We take only advertisements from legitimate houses of really meritorious goods, and give them all the editorial assistance they deserve; consequently our readers knowing this, have confidence in advertisements contained in our columns.

The fact that we have the best and largest houses in every branch of trade advertising with us, and that they always renew as their seasons arrive, proves beyond a doubt that they have found the AMERICAN ANALYST a good advertising medium. Why should not you?

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 14. NEW YORK, THURSDAY, APRIL 2, 1891. WHOLE No. 214

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - - $1 per year.
Single Copies, - - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.

Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.

Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,

H. LASSING, M. D., } *Editors.*
T. P. McELRATH, }

No. 19 Park Place. New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

Ammonia 160
Artificial Flowers 160
Disinfectants 162
Domestic Dietetics 161
Editorials 157
Doctors and Newspapers; American Quicksilver; The First Electric Motor.
Grocers in Tinsel 158
Hay Market Official Bulletin 164
The Problem of the Future 160
Pomades 161
Vaseline 159

DOCTORS AND NEWSPAPERS

The common sense tendency of the present period, among other reforms it is effecting, is gradually doing away with the system of exclusiveness with which the medical profession has striven to shield itself from the observation of the outside world. The latest step in that direction is the acknowledgment by the medical fraternity of the advantages derivable from newspaper co-operation. The Medical Society of this county last week discussed at considerable length the subject of the relations between the newspapers and its members, or, in other words, whether physicians should allow themselves to be interviewed and quoted by the public press. A majority of the doctors present at the meeting held, as too strict, the existing code which declares it unprofessional "to permit their opinions on medical and surgical questions to appear in the newspapers," and there is good reason to believe that the code of medical ethics will, before long be materially modified in this respect. Of course the daily papers have taken up the discussion, and are not likely to relinquish it. The objection urged by some of the doctors, that the public might derive harm through the lack of technical medical knowledge on the part of newspaper writers is fairly met by the *Recorder's* remark that "lawyers are apt to hold a similar opinion about newspapers and legal matters; although, so far as is known, no clergyman has yet thought it worth while to suggest that even a lay journal should have on its staff an eminent divine who should treat exclusively of religious affairs." The three learned professions, our contempory goes on to say, stand in such a relation to the public whose spirtual, corporeal and civil condition it is their business to look after, that the newspaper, whose function is a public one, should always be able to let the public know what those professions are doing for it. No special expert knowledge is here required any more than special information as to architecture is requisite in a man who writes editorially or as a reporter about a house that has tumbled down. When the doctors find themselves in the clutches of a newspaper interviewer they may be well assured that people at large "want to know, you know," and that the men who are sent to sound them are, as a rule, fully competent to do the work. If an editorial is needed about the matter it also will be written by somebody who knows quite as well what his relation to the public is as any physician possibly can. And the *Press* expresses the belief that the opinions on the subject laid down by Dr. George F. Shrady, "will be endorsed by the laity, and may be followed as a guide for the profession without detriment to its dignity." That eminent physician is quoted as saying that the proper course for a physician, to whom a reporter is sent, is to frankly express his professional opinions on subjects that really concern the public. But in doing this he would have the physician lay aside all thought of himself, and speak whole heartedly and to the best of his ability as a representative of his profession. This is not only a safe rule for physicians to follow, but one that would result invariably in the public benefit. It is when a physician sinks self that he elevates and ennobles his profession, and thereby unconsciously raises himself as well.

AMERICAN QUICKSILVER.

The principal uses of quicksilver are in the form of amalgams for recovering the precious metals, in making vermilion, fulminate of mercury for use in cartridges, in thermometers, steam gauges, and all kinds of mechanical instruments. In the form of corrosive sublimate it is not only an excellent disinfectant and antiseptic, but it is employed to a considerable extent in preservation of timber used in underground or underwater construction. But in that industry which is popularly supposed to consume a great deal of quicksilver, viz., the making of looking-glasses, very little is employed. Mirrors are now covered almost entirely with a solution of pure silver precipitated or sprayed on the glass. After this is done the glass would be still transparent were the backs not painted over with a brown or other dark colored paint of a certain chemical composition, first introduced from Bohemia by a firm in New York just before the war. In the old way of making mirrors the glass was covered with an amalgam of quicksilver and tinfoil, and whereas the silver-backed mirrors are ready for handling the next day, the quicksilver and tinfoil require two weeks before the amalgam was sufficiently hard for handling. The quicksilver process makes the best and most endurable work, the painted backs of the silvered glasses being apt to change color in spots. The quicksilver method is, however, the most expensive, which largely explains the reason for its decadence. The production of quicksilver throughout the world during the past ten years is put at 1,093,611 flasks, of which the United States produced 407,675, and Spain, Austria, and Italy 685,936 flasks. During the year 1889, California produced 26,454 flasks, or 2,024,496 pounds. California has 11 mines in operation, with 39 furnaces, employing 937 hands, of whom 520 worked underground. The amount of cinnabar ore mined was 95,714 tons. The capital invested in the 16 establishments is $1,333,114, of which $680,470 is represented by the mines and real estate, $222,300 in furnaces, houses, etc., and $146,150 in machinery tools, etc. The total expenditure for the year was $845,911, of which $626,288 was for wages. The cost of producing the quicksilver per flask averaged $33.31 per flask of 76½ pounds, or 43½ cents per pound.

THE FIRST ELECTRIC MOTOR.

It is a fact not generally known, that Vermont claims the distinction of the invention of the first electric motor. A blacksmith of Brandon, named Thomas Davenport, had a model of an electric motor in successful operation in 1835, by which he ran a small engine on a circular track. He secured a patent on his invention and exhibited his model in several cities. He succeeded, after much difficulty, in forming a company, with headquarters in New York, for the manufacture of engines under his patents, and work was actually begun, but the company soon became embarrassed through the dishonesty of an agent. Davenport died before he could secure new capital to carry out his idea. His model was purchased by the Rensselaer Polytechnic Institute at Troy, where it was kept as a curiosity until the destruction of the Institute buildings by fire in 1862.

ASBESTOS MINE.—The Seattle (Washington) *Press* states that quite recently, near Ledro, a party of prospectors discovered "a mine of asbestos which is inexhaustible in quantity." They had brought with them a sample, and, from what was seen of it and learned from one of the miners who had considerable experience in connection with the material, "it is thought that the quality of this mineral is of a superior order."

GROCERS IN TINSEL.

THE RECENT "FOOD AND HEALTH EXPOSITION" AT THE LENOX LYCEUM.

In the AMERICAN ANALYST for February 19, 1891, we made an announcement of the intention of certain gentlemen, who, for a consideration, manage the retail grocers of New York, to give an exposition at the Lenox Lyceum, in Madison Avenue, New York, of the pure food sold by their constituents. Our notice, we are informed, did not please one of those gentlemen, which is a subject of regret. After all the wholesale grocers, jobbers, manufacturers, and food purveyors of the United States had been duly cajoled, argued with, importuned and threatened to buy space in the Exposition Hall, and more space in the official souvenir catalogue, and a sufficient number had been talked into it, the Exposition was opened March 9. Our readers naturally expected us to tell them just what the much-trumpeted Exposition consisted of; we therefore went to the hall, and paying our twenty-five cents at the ticket window, for the benefit of the management, we were favored with an admission ticket and commenced our observations. First we noticed that, while there was no crowd at the ticket window, quite a throng presented tickets at the door, and if it had been a first night at a theatre we might have suspected "papering," an old dodge to fill a house, but as this was a "*pure*" food exhibition, we were compelled to frown down the impious thought. Arrived inside we found a great, surging, elbowing crowd chiefly engaged in a struggle to obtain free samples of various things, some that could be carried home and some that had to be eaten or drunk on the premises. The most successful foragers soon were loaded down with samples inside and outside, and many looked as if they would soon be able to start a boarding-house, provided they survived the inordinate strain to which their stomachs had been subjected. Just think of a person commencing a free lunch on three-minute oatmeal with cream, and then going through the entire menu of buckwheat cakes, maple syrup, cider, cocoa, chocolate, lager beer, mineral water, jam, jelly, preserves, ice cream, candy, soup, crackers, peptonized beef, artificial ice, plum pudding, salad dressing, bogus Worcestershire sauce, German wine, California wine, salicylated fruit juice, condensed milk, catsup, pickles, mustard, bogus coffee, caviar, Ceylon tea, yeast, green peas, mince meat, fluid beef, cocoanut with and without paraffine, salad oil, devilled crabs, bovinine, ginger ale, and—but our memory fails us, and we fear to trespass further on the credulity of our readers or our space. We will start out by saying that the sight presented to the eyes of the visitor was a beautiful one. The variety of colors tastefully blending in the bright electric and gas light, the tasteful arrangement of the various booths, and the displayed goods, all made a pleasing impression upon the eye. Bad management, however, permitted over-zealous salesmen to distribute free samples not only in the booths, which would have been but right and proper, but in the middle of the various aisles, thus creating an impassable and very dangerous over-crowding; the same thing was permitted in the narrow passage-ways behind the boxes, and also the encroachment of soda water stands on crowded stair landings made a promenade through the Exhibition Hall anything but a pleasure trip. The most striking displays made by those whose goods, known to be pure, will permit us to mention were those of the Cleveland Baking Powder Company, who had their space draped in orange and black to correspond with the color of their labels. The F. Schumacher Milling Company had an old mill with men, dressed as millers, handing out samples of oat preparations. Walter Baker & Co., in a modest side room upstairs, served all comers with chocolate and cocoa in a very handsome arbor and by young ladies dressed as their well-known trade-mark, the chocolate girl and men in the costume of pages. Richardson & Robbins had a tasty display of their celebrated canned goods. C. Maspero had an attractive exhibit of olive oil, and the Crystalline Salt Co. showed some fine, dry and white table salt. The Highland brand of milk people showed their condensed milk, misnamed evaporated cream; this would have offered a good chance for the Retail Grocers' Pure Food chemist to have shown his skill in detecting any characteristic of cream in this sterilized condensed milk. The New York Condensed Milk Co. confined their exhibit to the Eagle brand, which is their best brand, and the only New York product containing full sixteen ounces to the can, and their fresh milk and cream in bottles. There were two or three brands of desiccated cocoanut exhibited, all claiming to be pure. They can well afford to sell sugared cocoanut at the dear prices they get, but whether the paraffine added by one of these concerns to preserve their goods from rancidity adds anything desirable to the flavor we doubt. Not long ago it was clearly demonstrated that one brand of this desiccated cocoanut, to meet competition, was largely weighted with terra alba. Of course this particular brand was not shown at this Exposition. The Columbia Chemical Works distributed samples of their Zomonia, a combination of ammonia and soap powder and their oleated ammonia. Parke, Davis & Co., of Detroit, had on exhibition their Mosquera's Beefmeal, claimed to be a predigested powdered beef for invalids. Armour & Co., of Chicago, made a splendid and very attractive exhibition of their Fluid Beef Extract. Bovinine, made by the J. P. Bush Manufacturing Co, attracted considerable attention. The Christian Moerlein Brewing Co., of Cincinnati, made their debut in the East at this show with their queen of beers, "National Export." Carl H. Schultz had a large array of his syphons and fountains of artificial mineral waters. G. B. Seely's Son exhibited the various carbonated beverages made by him. The Phœnix Bottling Co. displayed all of H. Clauson & Son's brewings which they bottle. W. G. Dean & Son's Ardenter Mustard and Licorice manufactures attracted marked attention, but were brought in somewhat unfair competition with mustards made by other makers which would not bear scrutiny. Chas. Gulden showed a neat pyramid of his German and French mustards. Of cereals, good, bad and indifferent, there seemed to be no end. The Foulds Milling Co., of Cincinnati, claim for their wheat germ meal that it is composed principally of the germ and gluten separated from the starchy portion of the berry. George V. Hecker & Co. exhibited their innumerable preparations of flour and oatmeal. The Cereals Manufacturing Co. made a good showing of their A B. C. brands, but by indiscriminately attacking all their competitors in the circulars they distributed they hurt themselves. Rex Wheat was another aspirant for popular favor. Francis H. Leggett & Co. displayed, in addition to a variety of cereals, olives, extracts, jelly, spices and Hume's salmon. E. C. Hazard exhibited their new cereal Branum, tomato catsup and chutney, and Mayonnaise dressing. Pillsbury, of the Minneapolis Mills, had a fine large pyramid of his celebrated flours on exhibition. Potter & Wrightington, of Boston, did not exhibit their manifold fish products, but invited every one to Ta-Ka-Kake. M. D. Stevens' Imperoyal prepared flour and vacuum cooked cereals were brought into prominent notice. The Quaker Mills Co., of Ravenna, O., made a fine display of their oatmeal. Finally, we noticed the much-advertised H-O, but, as that manufacturer has not yet got over his fallacy of offering parched oats with a guaranty that they will cook in three minutes, he is a dangerous food purveyor and best let alone. Electric Lustre starch was there in all its Boston glory. We also could not suppress a smile at one well-known Cheap John spice concern, whose goods are best described as homœopathic, who distributed cards with the adjective "pure" applied to every article. The samples on exhibition may have been pure, but what do they represent? Among other exhibitors, was an imitation Worcestershire sauce, claimed to be imported in glass from England, and manufactured by a vinegar firm in "Brummagem." It had a decided Brummagem appearance and vinegary smell. The principal advantage claimed for it is cheapness; if the claim had been for cheapness and nastiness, it would be allowed. John Duncan's Sons, the American agents for Lea & Perrin's original and genuine Worcestershire Sauce, having for some reasons best known to themselves, like many other first-class houses, abstained from participating in this Exhibition, there was no standard of comparison. No one who knows the genuine Worcestershire Sauce will ever buy this cheap imitation, although the close imitation of the Lea & Perrins' labels on this stuff shows that the aim of the manufacturers is to get a part of the old-established trade of the older house. Like every other such imitation, it will prove a failure. Among the chocolates and cocoas exhibited, was Maillard's, Huyler, Chocolate Menier, Rockwood and Runkle, the latter having been allowed by a peculiar management to completely block up the entrance to Walter Baker & Co.'s much larger and handsomer exhibit. Both the competing cracker bakeries had fine exhibits. Pyle's Pearline shone resplendently above every other soap house; Curtice Brothers' canned goods; Washburn, Crosby & Co.'s flour; Goode's Ball Blue; E. T. Cowdrey & Co.'s canned foods; Franco-American Food Company's soups; Platt's chlorides; Durkee's condiments; Hygeia water; Malted Milk Co.; Wrigley's scouring soap; scourene; Arkell's hams; Ross's ginger ale; Reynold's cheese; Gladding's popcorn; Bolen & Byrne mineral waters; Max Am's preserves; Dobbin's Electric soap; Lalance Grosjean Manufacturing Co. agateware utensils; Major's glue; Higgins' soap; Fleischman's yeast; several more or less pure or impure California wines, with and without French and German labels, made up the balance of the jumbled up advertising show. This is really what it was, gotten up primarily as a money-making scheme, with no possible chance of accomplishing any good for the advancement of pure foods—a huge, over-crowded, illy-arranged fair, ostensibly for the purpose of showing only pure goods, in reality to exhibit anything and everything that would pay for space and advertising. It will be a good thing when closed, and it is to be hoped never to be repeated again. One feature particularly noticeable was the conspicuous absence of any representation of some of the best-known food producers who generally exhibit at all first-class expositions, such as F. H. Ferris & Co., ham and bacon; Gordon & Dilworth, John Duncan's Sons, J. P. Smith, Thurber, Wyland Co., Bass' ales and Grattan's ginger ale, St. Louis Stamping Co.'s agateware, nearly all the large soap manufacturers, the principal starch manufacturers, Atmore's mince meat, and too many to put down here, who invariably exhibit at every first-class exposition. Why this was so we can only surmise, and must leave the reader to guess. Additional attraction was supposed to have been given to this show by the high-sounding announcement that a prominent chemist would be in constant attendance, who would on request analyze, in the presence of the visitor, any suspected food product on exhibition. Every one knows that no reputable chemist would do this, and that no real chemist could do this, yet we cannot help the thought that if such a thing were possible what a Herculean job he would have had, for the well-known and oft-exposed food frauds had tons of adulterated stuff on exhibition. Some of the exhibitors were shrewd enough not to exhibit any of the goods they usually sell, but had procured "for this occasion only" the best that could be found in the market, regardless of price, and were brazenly distributing samples of such goods as specimens of what they wished the public to believe they always sold. Hosts of what the managers well knew to be base imitations were here on exhibition. In some instances first-class houses, well known to have only pure goods, were found in out-of-the-way corners, while those having the vilest trash to sell were in the most conspicuous places. It seemed as if the question was not to get up the best exhibition of pure food, but the largest exhibition of anything the owners of which would pay best for prominent places on the floor and in the advertising pages of the programme. If this was the sole intent, the Exhibition must have been a huge success, and the managers can well rub their hands in glee.

VASELINE.

A GERMAN CHEMIST DESCRIBES ITS MANUFACTURE.

The lack of communications concerning vaseline and its manufacture leads us to imagine that a few remarks on this subject may be of interest to chemists and others. In a previous number of the *Chem. Tech. Cent Anzeiger* (1881, 42) two methods of manufacturing vaseline are given, one of which is specially prepared for official inspection, the other being entirely devoted to the excellent article made by L. Meyer, of St. Johann. No special points in the manufacture are brought out, and there is no space devoted to the theory of the manufacture, which is specially necessary for the explanation of this industry. It should also be noticed that several expressions in the descriptions above referred to appear more suited for a technical society than for a scientific journal. That "sulphuric acid produces particles of carbon in oil" is, to say the least, not an expression which can be recommended as a model of scientific accuracy. It is also difficult to understand why the last traces of the chemicals employed cannot be removed from the oils. We, in the mineral oil industry, remove the very last traces of reagents, and so do those vaseline manufacturers who use chemicals, and do not confine their purification to filtration through a charcoal filter. It is now generally known that every vaseline manufacturer has his own secret process, and preserves it as closely as he can; any one not belonging to a works being thus compelled to make his own investigations. Leaving unregarded the two methods previously mentioned, the following process has been devised, similar to that usually employed in the manufacture and purification of brown coal tar. In commencing such an investigation, it is necessary to first of all definitely settle two points: "What is the quality of the new material?" and "What impurities are to be removed, and how can this best be done?" Knowing this, the outline of the process to be adopted is more than indicated. The nature of the raw material varies greatly. It usually consists chiefly of the residues of the so-called American petroleum, or it may be Russian oil, especially from Baku, under Galician oil, and even bitumen itself, or natural asphalt, either in the solid state under this name, or of the consistency of tar, under the name of mine tar. It is, of course, obvious that no fixed method of preparation of the article termed vaseline can be given; and, in fact, the processes employed are very numerous. The paraffins, as is well known, are hydrocarbons of the marsh gas series, and are classified into normal and iso paraffins, the corresponding members of which have the same percentage composition, but different structure. The American raw material—the viscid residue left on the distillation of the petroleum—is indispensable for the manufacture of yellow vaseline. The American petroleum, as obtained by boring, contains both classes of paraffins, of which the normal can only be brought to crystallization by the distillation of the petroleum, whereas the iso paraffin remains dissolved in the oil. According to the extent to which the oils are distilled off, a more or less liquid or pasty product is obtained—lubricating oil and vaseline. The distillation therefore effects the separation of crystallizing from amorphous paraffin, and only such raw materials as contain the latter, which therefore cannot pass or can only partially pass into the crystalline state, are fit for vaseline making. Saxon brown coal tar, as is well known, deposits soft paraffin in scales in the cold, and contains no amorphous paraffin. These oils cannot, therefore, be used for the manufacture of lubricating oil and vaseline. The case is quite different with American petroleum. The residues from the distillation of American petroleum, which, as already mentioned, form a viscid or even soapy mass, are heated by steam and then well agitated with sulphuric acid to remove the resin which is still present. At the close of this operation, after running off the resin by a tap, the excess of acid is neutralized with caustic soda or sodium carbonate solution, and the oil thoroughly washed with hot water until all the soda is removed The material is then decolorized by animal charcoal, the liquid vaseline being stirred up with the charcoal by the aid of steam, and is then filtered hot. The only difficulty which has to be overcome in purifying the distillation residue lies in the correct proportion of soda solution to acid, which must be closely adhered to, since an excess of the former may emulsify the whole mass. The animal charcoal which is employed to decolorize the hot vaseline contains, as is well known, many inorganic salts especially calcium phosphate and magnesium phosphate, as well as potassium chloride, sodium chloride, etc., so that it must be washed out with hot water, then with hydrochloric acid, then again with hot water, and finally dried; it thus acquires the property of retaining any caustic soda which has not been removed by washing. The Russian oils are of special interest because of the "vaseline oil" which is made from them. After the light oils and normal paraffin have been removed from the oils, the heavy oils are purified by pressing, whirling and decolorization, and then form the "paraffinum liquidum" of the pharmacopœia, which is also, probably, a solution of the iso paraffin in mineral oil. Messrs. Hill, of Troppau, in Austrian Schlesien, have for some time been producing a so-called "viscous natural vaseline." This product is of a darker color than the American quality, and is manufactured from so-called "blue oil," obtained in the distillation of Gallician petroleum, directly after the light oil. It is an almost buttery mass, which deposits scales of paraffin in the cold, and is, therefore, also a mixture of heavy oils and solid paraffins. If, however, the distillation be stopped immediately after the lightest oils have come off, the residue in the retort, after treatment with sulphuric acid, etc., forms a homogeneous, fatty, lustrous mass—vaseline. This "viscous natural vaseline" is, therefore, the residue of the so-called "blue oil," which still contains amorphous paraffin, to which it owes its viscosity. In making some experiments on the manufacture of vaseline, an oil was selected which had been obtained from the natural asphalt of Bentheim. The latter was submitted to distillation over a fire, and the oil fractionated according to its specific gravity. The oil of specific gravity 0 856 appeared the most suitable for the purpose. It was mixed with 4 per cent. of sulphuric acid of 66 deg. B., and the resin drawn off after allowing the oil to stand for about twelve hours. It was then washed repeatedly with hot water until the latter gave no reaction with litmus paper. The clear oil was next thoroughly shaken with caustic soda solution to remove creosote, the lather drawn off, and the oil again washed and treated while hot with the so-called decolorizing powder, the residues of the potassium ferrocyanide manufacture. The mass was then filtered and distilled until a heavy oil remained in the retort, which, after pouring out, became more viscid on standing, and was a kind of vaseline, since it deposited no crystalline matter even at 10 deg. Unfortunately, the light yellow mass became dark-colored again when the oil was redistilled over the flame. However, no apparatus was at hand which would permit of the treatment of the strongly concentrated oils with reagents by the aid of steam, and it was, therefore, necessary to distill the oil after treatment. The vaseline obtained was yellowish brown, and had the well known bluish fluorescence, but was still rather fluid, differing in this respect from the American article, which it otherwise resembled. The object was to prove that any distillation residue containing iso paraffin is more or less fitted for vaseline making, and this was successful. Whatever special method the individual manufacturers may possess of bringing the oils to the right consistency more rapidly and more simply, or of producing a light-colored and odorless vaseline, the main outline of the process adopted cannot vary much, and must lead to the wished-for end, provided that the crude material contains amorphous paraffin. Only such a material, which remains without crystalline deposit, even in the greatest cold, can produce the requisite viscosity of vaseline, and it will be found impossible to produce viscous vaseline from an oil which contains normal paraffin. The product will simply be a solution of crystalline paraffin in oils, without possessing the proper viscosity of vaseline, and will crystallize at a low temperature.—*Chem. Tech. Anzeiger.*

NEW SPIKE.—Recently experiments have been made in the manufacture of spikes, with a view to making a finished article by rolling the bar in such a manner that its width shall be the length of the spike, and in such shapes that the spikes may be cut from it with shears, similarly as a cut nail is made, except that the head is made in the rolling process. In tests made by running through some steel nails that had been slowly heated for 2½ hours the result showed that the mechanism might be adapted to the object aimed at.

MANUFACTURED RELICS.—Many Western towns are filled, just at present, with itinerant vendors of souvenirs of the fight at Wounded Knee, and for a moderate investment of cash the Eastern tenderfoot can procure any sort of a relic—from "the leggins the Medicine Man wore when he threw up a handful of dirt and ordered the red devils to fire," to a ghost-dance shirt. A genuine article of this sort, brought by a Chicago newspaper man from the battle-field, where it was stripped from the back of a dead squaw, is made of white cotton-cloth, embroidered with yellow. It is covered with blood from the wound that caused the former owner's death, and is a most ghastly trophy.

OVERCROWDED PROFESSIONS.—France is suffering almost as much as Germany from the overcrowding of the learned professions. Fifteen thousand schoolmistresses, 7,000 primary schoolmasters, and 500 high-school instructors are looking in vain for employment. There are 27,000 French physicians—that is, about 6,000 or 7,000 more than there are in Germany, with her 10 000,000 more inhabitants. Paris has 800 apothecaries. Two thousand lawyers in Paris, who have passed all preliminary examinations for a full practice, cannot make livings in their professions. Civil and mining engineers are so numerous that hundreds of them are seeking eagerly petty positions in mines and factories.

COUNTERFEIT GEMS.—No other gem has been counterfeited with such perfection as the emerald, and in fact it is utterly impossible to distinguish the artificial from the real gems by the aid of the eye alone, as even the little flaws which lull the suspicions of the experienced, easily produced by a dexterous blow from the mallet of the skilled artisan. Not only emeralds, but most of the gems and precious stones are now imitated with such consummate skill as to deceive the eye, and none but experts are aware of the extent to which these fictitious gems are worn in fashionable society, for oftentimes the wearers themselves imagine they possess the real stones. There is not one in a hundred jewellers who is acquainted with the physical properties of the gems, and very few can distinguish in the rough the diamond from the white topaz and the zircone, the emerald from the tourmaline of similar hue, the sapphire from the iolite, or the topaz from the Bohemian yellow quartz. Jewellers are governed generally by sight, which they believe to be infallible, while hardness and specific gravity are the only sure tests.

ANTE-COENAL MOODS.—"Do you know," said a matron, whose married life extends over a score of years, "that I attribute, in a considerable degree the happiness of our life to a custom which my husband and myself have unfailingly respected—we never do any talking, hardly speak to one another, indeed, before breakfast. He was quite a confirmed bachelor when I married him, and he told me soon afterward that, until he had taken his breakfast coffee, he held the most morose and gloomy views of every thing. I thought at first this was a little peculiar, but when my attention was thus called to it, I discovered that I, too, found life much more agreeable and small burdens more bearable after I had broken my night's fast. Many wives tell me their most available time to talk over things is during the dressing hour. I always feel like begging them to try some other time. It is a mental exertion to discuss the ways and means of this exacting existence of ours—too great a one, I think, to be indulged in before breakfast."

AMMONIA.

WHAT ITS PRESENCE IN WATER AND FOOD ARTICLES MEANS.

Since the publication of Wauklyn & Chapman's methods of water analysis, the ammonia test of the purity of water has been universally adopted by chemists. The danger in drinking water is just in proportion to the amount of ammonia it contains. This has long been known, but so small an amount was necessary to make a water unhealthful that until the discovery of recent chemical processes, it was almost impossible to apply any test that would measure it. Now, by what is known as the Fessier test, one part of ammonia in 200,000,000 parts of water is instantly detected. But what is ammonia? Ammonia is a colorless gas of a pungent smell, and strong alkaline taste. It is obtained from its salts, sal ammoniac, by the action of a strong solution of potash or soda. Ammonia salts are the products of putrefaction. It was first manufactured in Egypt, whence all of Europe's supply for many years came. The most prolific source of ammonia is from the decomposition of animal excreta and urine, and in Egypt it was made from camels' dung, and, as large amounts of this were collected about the temple of Jupiter Ammon, the drug was thus named ammonia. During the months of March and April the decomposing dung contains the most ammonia, and during these months the poor people collect and dry and burn it. The soot which comes from its smoke is collected and sold, and from it is manufactured ammonia. That was the process of manufacture in times gone by. A good deal was also made in early times from putrid urine and other forms of decomposition. Since the introduction of gas lighting, however, ammonia has been made almost entirely from crude gas liquor, although it is still manufactured by the fermentation and distillation of decaying animal matter. Owing to its pungent odor and taste, which renders its detection very easy in immediately deadly quantities, deaths from ammonia are less frequent than from many other less powerful poisons. In point of frequency, as causing death by murder, suicide or accident, ammonia is classed in England as thirteenth in the list of poisons. Alexander Wynter Blyth, of the Royal College of Surgeons, and medical health officer of London, mentions thirty cases of poisoning by ammonia direct, or by some food article into which ammonia entered as an adulterant. In two of those cases doses were given to children for the purpose of murder. In eight cases it was taken for the purpose of committing suicide. The remaining twenty cases were accidental; that is to say, the ammonia was unknowingly taken in some good preparation. Six out of the eight suicidal and twelve out of the twenty accidental cases resulted fatally. Ammonia is set free in considerable quantities from decomposing guano. Men who work in guano factories suffer slow poisoning from it. It causes total deafness in some cases, and in nearly all cases of men so employed there is noticed a peculiar discolorization of the skin of the nose and forehead. Ammonia absorbed in even infinitessimal quantities, during a continuous period, imparts to the complexion a peculiarly dead, pasty appearance. The skin is usually the first to show in this way traces of the drug. Other symptoms are a general lowering of bodily strength, dull, lack-lustre eyes, and evident anæmia. Its effect upon the more sensitive organization of women is more quickly noticed than upon men. It produces more quickly with women the sallowness of complexion which is one of its earliest symptoms. This discoloration is a marked feature of ammoniacal poisoning. Post-mortem examinations of those who have died of the poison show that the coats of the stomach and of the intestines are stained a dark hue. The time of death from ammoniacal poisoning varies from four minutes to several months, according to the size and frequency of the dose. In the mechanical world ammonia is of great use. Its strong alkaline effects make it very valuable for the coarser sort of scouring and cleansing. A great source of danger to the public health is its frequent use as an adulterant in food preparations. The manufacturers of baking powder resort to it the most frequently and the most recklessly. By its use a great saving is made in cream of tartar, which is very expensive, and at the same time the ammonia gas, which is liberated by the action of the soda in the powder, gives great leavening strength, but a heavy residuum of sal ammoniac is always left in the bread, and this strong irritant is highly injurious to the coating of the stomach. It produces acute dyspepsia, and in time the blotched, sallow complexion, and other symptoms of ammoniacal poisoning appear. There is even more danger to public health from such sources than there is in the contamination which the chemists agree that the presence of ammonia in hydrant water implies. A mere trace of ammonia in water is sufficient to cause chemists to condemn it. In the adulteration of foods it is used with a recklessness that is little short of criminal.—*Boston Herald.*

ARTIFICIAL FLOWERS.

HOW THEY ARE MANUFACTURED IN NEW YORK

The process of flower making begins, according to a writer in *The Sun*, with the man who stamps out leaves and petals. He has perhaps one hundred short, stout iron spikes, each bearing on one end an iron stamp, fashioned so as to cut out of cloth bits shaped like the petals of one flower or another. The cloth, velvet, sateen, satin, or what not, is laid upon a leaden slab and the stamp is struck smartly with a hammer. In this way thousands of petals are struck out rapidly, the cloth being folded many times before the process begins. From the stamper the work passes to the dyer. The latter is usually a Frenchman or a German learned in the art of mixing colors. Rose petals come to him white, and he dabs each with a bit of carmine, leaving the points untouched. From him the petals, ranged in rows on a board, pass to a boy or girl, who applies a bit of yellow dye to the white point. Then the petals are put over a furnace to dry. From this point onward the work is done exclusively by girls. Their tools are exceedingly simple. The gopher is a little iron implement for curling petals. Tweezers, scissors, and mucilage brush about complete the outfit. The flat rose petals are set before half a dozen girls, seated around a table, upon which glows a small gas furnace. Each girl is armed with a gopher, and the gopher, after being heated a moment in the flame of the furnace, is applied with a quick wrist motion to the petal as it lies upon a little cushion. Under the heat and pressure the petal is instantly curled into a hollow, cup-like imitation of the natural object. The freshly gophered petals are presently put together along with the stamens or "pips, as they are called in the trade. These are usually made by machinery at another factory. Sometimes the stem and branch of the rose are imported, and merely tacked on in the factory; but this part of the business is also carried on here, and there are some branchers in New York. Although the work is thus minutely subdivided, the best flower makers learn the business in its entirety, save stamping and dyeing. Those branches seem to be left almost exclusively to men. The test of a girl's skill lies in her ability to make a rose. The best rose-makers follow nature with marvelous fidelity. The manufacturers show you branches of clustered roses with everything complete, even to great natural-looking thorns and defective, worm-eaten blossoms. Dozens of flowers are imitated in the factories of this town, but the more familiar blossoms are most in demand. It is a secret of the trade that blue corn flowers are to be popular this spring, and there are many hundreds of boxes of them blooming beautifully in the factories at this moment. The show-rooms at the factories are a perfect delirium of color now, and the stock will go on accumulating, until the retailers begin to get hold of it six or eight weeks hence. January is the height of the busy season with the flower makers, and the work goes on briskly through February and March. It is duller in April and by the first of May there is nothing more to do. Then, however, preparations are made for feather curling, and during the hot weeks of July thousands of deft fingers are busy making the feathered ornaments that are to adorn fashionable hats in the following winter. If flower making went on the year round, the flower makers would be well enough off. A clever girl acquires in two years sufficient skill to command from $8 to $12 a week, and the best workers earn even as much as $18 a week. Forewomen get from $20 to $30 a week, though the latter is a high figure. Most of the girls are very young. Many begin to learn the business at 12 to 14 years of age, when they can earn only $1 a week, and when some even must pay for the privilege of learning.

THE PROBLEM OF THE PERIOD.

HOW SHALL THE ARMY OF THE UNEMPLOYED FIND SUBSISTENCE?

The social problem of to-day has many perplexing phases, but there is one that almost fills us with consternation. What can we say when men want work, and yet there is no work for them to do? If a man is not able to work, the instincts of humanity lead us to help him; if he *will* not, he should either be made to, or else allowed to starve. But if we open our eyes and look beyond the surface of things, we are led to suspect that there are not few persons who belong to neither of these categories. Careful observation shows that there are in Great Britain several millions of the unemployed who would gladly work if they could get work, and a million such on this side of the ocean, taking the country altogether. But how can it be? we ask. Is not every pair of hands able to add a certain amount to the wealth of the world—to produce at least enough to get in exchange what is necessary to keep one alive? It would seem rational to suppose so. How is it, then, that an able-bodied person of good habits can go about seeking for work and not finding it? The immediate answer is, of course, that no one wants to employ him. But why the refusal to employ? The answer often comes from the employer or business house, "We have already more labor than we can profitably use." Notice for a moment what is implied in such an answer, "Profitably use!" It means that, if a man is hired, it is assumed that his labor is sufficient not only to support himself but to help in the support (*i. e.* to add something to the purse) of the one who hires him. The labor that is employed in the ordinary channels of industry has a surplus value; it creates more than is necessary to sustain itself — and the "more" helps to make the profits of those who employ it; it is to get this "more" that employers (so far as they act from business motives) hire labor; and when it ceases to have this surplus value, they do not hire it. If this is so, the question of the unemployed presents a new face. If a man is honest and industrious, and able to earn his bread, he can find employment only in case his labor will produce a profit for some one else. If his labor is sufficient simply to put clothes on his back and food in his stomach, and provide shelter for himself against wind and weather (and by himself I mean his family too), he may not find employment. The only alternatives are in case he can employ himself, or can go back to the original reservoir of all force, and earn his living directly from the land. Self-employment, however, in competition with the large organized industries of the present time, is almost impossible. Nor is getting one's living from the land so easy a matter. First, there is the difficulty for the poor man of getting to the land. Second, the land of the country is fast passing into private hands, so that, save in rare instances, one must

pay rent for the privilege of getting one's living from it. This means that the worker shall be able to produce a surplus over and above what is necessary for the subsistence of his family, this surplus going into the owner's pocket. The case standing thus, it seems to me perfectly possible that there should be a considerable body in the community ready and able to support themselves, who have either to secure charity or steal or starve. Mr. Mills, in recounting his experience among the destitute poor of Liverpool, tells that one cold December morning he found in a certain house a baker out of work, and next door to him a tailor out of work, and next door again a shoemaker in the same plight. The trouble with these people was, of course, so far as each of them was concerned, that their services could not be employed at a profit by any one—the markets, perhaps being already stocked with bread and clothes and shoes, and there being no money in making any more. But why could not these people provide directly for each other's needs, irrespective of whether there was a profit for any one in so doing? Why should not unemployed bakers and tailors, and shoemakers and masons, and carpenters and tillers of the soil be taken out of the profit-making system into which they do not fit, and making themselves into a colony, the bakers bake bread for all, the tailors make clothes for all, the carpenters make houses for all, the tillers of the soil raise corn and wheat for all—each class producing, not to sell to the outside world, but for each other's use, and each class receiving in turn of the benefits of all the others' labor? Once give up the idea that the present system is anything like a part of the order of nature, or otherwise necessary and unchangeable (save that selfishness is necessary and unchanged), and the thought becomes easy of breaking away from the system, and founding an industrial order on other principles. Such co-operative colonies are the only hope that I can see for the unemployed. Sooner or later we shall understand that there are more people than can be made use of in a profit-making system. and that if the surplus population is to have any honor or manliness left in it, it has got to be removed from such a system. Everything would ultimately depend upon wise direction and management. The State, I think, should have as little to do with these colonies as possible. I should look with more hope to some voluntary organization like the Salvation Army than to the State as at present organized. "In Darkest England" seems to me one of the humanest and one of the wisest and most practical books that have been produced in this century. Among the book's recommendations not the least wise is the co-operative factory and colony idea.—*New England Magazine.*

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

April.

MEAT.—Beef, lamb, mutton, ham, kidneys, liver, sausage, veal.

GAME AND POULTRY.—Brant pigeon, chicken, duck, turkey, goose, snipe.

FISH.—Anchovy, bass, cod, snipe, eels, carp, catfish, flounders, halibut, herring, lobsters, mackerel, mussels, oysters, perch, rock-fish, salmon, smelt, white-fish, trout, sturgeon.

VEGETABLES. — Artichokes, beans, carrots, celery, garlic, lettuce, onions, parsley, parsnips, potatoes, shallots, spinach, turnips, watercress, radish, rhubarb, sea kale.

PRACTICAL RECIPES.

RICE SOUP.—Put a shin of beef to cook for five or six hours, then remove the bone; see that your pot contains four quarts of water, and add the following ingredients: a chopped onion, a grated carrot and turnip, two table-spoonfuls of chopped parsley, half a pound of rice, and salt and pepper. Let these cook in the soup for about an hour, then serve.

BECHAMEL SAUCE.—Put into a saucepan half an ounce of butter, half a medium sized onion, minced, half a pound of minced raw veal, one small carrot, shredded; toss about for two minutes, to fry but not to color; add two table-spoonfuls of flour, stir it about with the vegetables, then add three pints of hot water, or, if convenient, use hot soup stock instead; add a pint of boiling cream. Season with half a teaspoonful of salt and a salt-spoonful of white pepper. Simmer one hour and strain into a saucepan. Add to each pint of sauce half a wineglassful of cream; simmer for a few minutes; strain it again into a crock and whisk it until cold, to prevent a thick top from forming. When wanted for patties, or anything else, boil one pint of it with an ounce of butter, whisking it thoroughly.

CRAB PATTIES.—Prepare some crab shells; take a quart of solid crab meat, either picked from the shells or purchased already prepared; add to it a pint of bechamel sauce; strew in a few shredded mushrooms; fill the crab shells with this and serve.

SAVORY CHEESE CAKES.—Take a cup of finely grated cheese, season it with a dash of cayenne and a little salt; add half a cupful of very fine bread crumbs and the beaten yolk of an egg; form into small cakes and fry on both sides in butter; serve at once. Very nice for lunch.

APPLE PUDDING.—Line a pudding dish with puff paste; lay in a layer of thinly sliced apples, then a sprinkling of cinnamon and sugar, another layer of apples and some sugar and a very little ground clover; some more apples then sugar and nutmeg; cover with a crust with a hole in the middle; mix half a cupful of white wine vinegar with four large table-spoonfuls of sugar and pour them into the hole. Bake half an hour.

ENGLISH WEDDING CAKE.— Two pounds butter, two pounds flour, one pound powdered sugar, sixteen eggs, eight pounds currants, one pound blanched sweet almonds, one pound candied citron, one pound candied orange and lemon peel, one grated nutmeg, one teaspoonful mace. First beat the butter to a fine cream with your hand, then stir in the sugar for a quarter of an hour. Beat the whites of the eggs to a strong froth, and mix them with the sugar and butter. Beat the yolks for half an hour, and mix them well with the rest, then by degrees put in the flour, mace, and nutmeg, and continue beating the whole till the oven is ready. Put in the currants (which have been washed, and picked, and dried by the fire until they are plump), citron, orange, lemon peel, and almonds; lightly chop up the almonds; bake in a moderate oven. Icing.—white of five eggs, half pound powdered loaf sugar, two table-sponfuls starch. Put in on the cake when it is warm.

TRIPE AND OYSTERS —Wash one pound tripe, cover it with fresh cold water, add half a cupful of vinegar and a little salt, and let it stand one hour; drain, cut into dice, and cook for three quarters of an hour in water slightly salted. Take out the tripe; take four cupfuls of the water and put to it half a table-spoonful of butter, a little lemon-juice, some pepper, and a good table-spoonful of flour mixed smooth in half a cupful of cream or milk. When the gravy is thick and smooth add the tripe and one pint of raw oysters; add a dash of nutmeg; let it cook for twelve minutes, then serve.

FOG AND GAS —It has been found, from an investigation made at Dundee, that when a dense fog exists, the proportion of carbonic acid gas in the air is eight volumes per 10,000—the normal proportion being four. In London the proportion is twelve volumes, or even more, under similar circumstances.

POMADES.

FASHIONABLE FRAGRANCE FROM FRESH FAT AND FLOWERS.

During the recent development of horticulture in Florida and California many experiments have been made in the production of perfumes from flowers, and many of these have resulted successfully. There is little wonder, therefore, that inquiries are often made as to the possibility of growing flowers at a profit for manufacturing purposes in the genial climate of these and other States. Many of these inquiries are evidently from persons who have not even a vague idea of the result to be arrived at, not to speak of the details to be pursued, so that perhaps a few hints from one familiar with the products may be useful. Despite all the triumphs of modern chemical science, which has produced synthetically many odors which are more or less useful, it still remains the fact that all high class floral extracts. by whatever name known, are composed, to a greater or less extent, of one or more of the following odors: violet, rose, jasmine, acacia, orange, tuberose and jonquil. With one or more of these in combination with some resins, oils, and animal secretions, the skilful perfumer is able to imitate the odor of any other flower, and produce pleasing bouquets. These odors are bought by the perfumer in the form of pomades, experience having taught that this is the only feasible means of securing them properly. Practically, then, our citizens have this problem before them very clearly, namely, to produce a highly charged pomade at a price which will enable them to compete with the flower farmers of Southern France, who at present supply the world's markets. This pomade is marketed in eleven and twenty-two pound tins, varying in price according to quality. It pays fifty per cent. duty, and the present wholesale price is about $2.50 per pound for violet, and $1.50 to $1.65 for the others. Like all manufactures, the making of pomade cannot be taught by books, but a few hints may help the experimenter. The process of extracting odors is known as *enfleurage*, and is carried on either with or without heat. Jasmine and tuberose flowers are exposed to lard spread thinly on sheets of glass in suitable frames; this soon absorbs the odor, and by renewing the flowers the grease becomes saturated. The perfume of the other flowers is extracted by hot *enfleurage*. In this case an addition of beef fat is made to the lard (insuring a higher melting point); this mixture is heated to the melting point, when the flowers are thrown in and rapidly stirred through the grease; the semi-liquid mass is put under a strong press with suitable filtering material until the flowers are separated. The process is continued till the grease is practically saturated with odor. These processes are simple, and with a supply of flowers there is no reason why a good pomade cannot be produced in this country. Judging from some inquiries, however, it does not seem to be generally understood that the process depends primarily on securing perfectly pure and odorless lard, which is by no means the same as the lard of commerce. No amount of perfume will make impure grease fragrant, and the perfumer will not buy an article of the kind at any price. In his laboratory the perfumer is one of the most practical of men, and buys his materials on their merits. It is just as important to have his pomades free from false odors as that his spirits should have no trace of fusel oil. The process of securing lard free from albumen, membrane and blood, is as follows: Cut up the fat in small portions, separating the membranes as far as possible by hand, and wash till the water runs clear. Melt with a gentle heat in an iron or copper vessel over a water bath, and continue till it becomes anhydrous, or free from water—which may be known by its becoming perfectly clear. Finish by filtering through a clean cloth. This lard will retain an odor which may be removed by remelting and adding a small portion of alum or common salt, and keeping it over the fire till a scum rises, which should be skimmed

off. The salt must then be washed out and the lard again rendered anhydrous. Such lard is kept in a moderate temperature in tin, sealed from the air, and it will remain sweet as long as is usually necessary. It will be well for one who intends to try the perfume industry to secure a sample of the French pomade from some perfumer, so that an idea may be had of the strength of odor desired in the market. The prospect of success offered by this industry can only be learned by experiment, but it is certain that no careless methods will answer. As in other things, there is room at the top, and high class products are certain of a market.

DISINFECTANTS.

A DOCTOR'S CONCLUSIONS AFTER A LONG SERIES OF EXPERIMENTS.

There is one question that has often been put to me by doctors or laymen. It is: "Which is the best disinfectant?" The question is precise, but the reply is far from easy, nor can it be of such a simple character, writes Dr. Paul Gibier in the New York *Herald*. To begin with, we must ask for what purpose the germicidal agent is to be employed—whether for the rooms of the sick, the closets, the stables, or for the sick themselves, and, if this be the case, is the germicidal agent to be employed internally or externally? It seems possible that some product might be discovered capable of being applied in every kind of disinfection. But it must be confessed that up to the present such a chemical compound has not been discovered, and it would be actually impossible to use as a dentifrice the same antiseptics which are in vogue for human habitations for instance. Before entering more deeply into the question, it can be stated that each special case demands a particular "bactericide." To begin with, let us look into methods of disinfecting houses in times of epidemics. A great number of chemical bodies, solids or liquids, were formerly employed, but since we have been able to experiment directly upon contagious germs, as in the case of cholera and typhoid fever, we have, by the result of most disappointing experience, been compelled to reject as absolutely inefficacious the great number of well-known disinfectants, such as the sulphate of copper and the sulphate of iron. It would be decidedly out of place in an article such as this to cite the researches made by original investigators to investigate the value —more or less great—of disinfecting agents considered as such. It will be sufficient for me to say that after the experiments to which I allude, as well as from my own experiments, I shall limit myself to advising those means and methods that I employ myself, which I consider the most simple, the most efficacious, the least dangerous, and at the same time the most economic. In the laboratory which I direct there are always over a hundred animals being experimented with. It has been necessary for me to have recourse to this method of sanitation, and I will say here that after my experiments and researches I find that the chloride of zinc somewhat acidulated is the most satisfactory disinfectant. In the middle of summer add to the chloride of zinc a small quantity of chlorohydric acid (4 per cent.), and one may stay in the apartment where the animals are without being aware of their presence by their scent. This substance, which I indicate and advise for disinfecting purposes, can be utilized in the closets, for utensils, and for the rooms of the sick. The price is very moderate, and the solution is without danger and does not hurt the furniture It now remains for me to speak of antiseptics applicable to personal use. For external use, for the ordinary toilet purposes, I cannot too strongly advise against the use of any chemical compound. Pure water is the best disinfectant there is as long as we have no organic disease to deal with. I have often used carbolic acid and the bichloride of mercury, and, despite the dangers of intoxication, which one must watch in special cases, I use them still. But, in consequence of certain experiments which have been made in my laboratory and in the dispensary of the New York Pasteur Institute, I now employ almost exclusively for the wounds of bites the peroxide of hydrogen. This chemical compound was discovered three quarters of a century ago. Still it is only quite recently that its extrordinary qualities have been studied. The peroxide of hydrogen is a chemical body, a liquid, of the most remarkable character. Its composition is the same as water, with this difference, that instead of being composed like water of two atoms of hydrogen and one atom of oxygen it contains an extra atom of oxygen. Now, strangely enough, oxygen, which is necessary to the functions of life—of the being in general and of certain microbes in particular, but not of others—becomes an agent of destruction for these very same microbes the moment it is present in excessive quantity. The peroxide of hydrogen, which is a sort of concentration of oxygen, is an energetic antiseptic, and in my experiences I have been enabled to prove that when used in a degree of concentration absolutely inoffensive for the tissues of the human body it destroys almost instantly the microbes of hydrophobia, of typhoid fever, of cholera and a quantity of other bacteria. Its action upon the wounds is exceedingly healing and curative. I am convinced that a number of cases of diphtheria could be cured radically in their beginning if the diphtheretic membranes were impregnated with a powerful bactericide, which was at the same time a non toxic. To resume and to refer in a few words to the question that is so often addressed to me and to others, "Which is the best disinfectant?" I would say for objects the chloride of acidulated zinc, and for persons the peroxide of hydrogen, which is at once a most powerful antiseptic and completely innocuous in its workings.

CONSUMPTION AND CARELESSNESS.

Though Professor Koch's famous discovery is far from complete, he has more than demonstrated that the chief cause of the long list of diseases known under the general name of consumption is a microscopic organization, so low as to be neither animal nor vegetable, and that underc onditions of ill-health or impure blood this bacillus or microbe is born, thrives and multiplies at the final expense of the life of the unfortunate being in whose body it finds a receptacle. The value of the researches of the great German physician can never be over-estimated, and place him on a par with Harvey, Hunter and Jenner, Lister, Welles and Pasteur. While he proves that the disease under its many forms can be successfully resisted and in most cases cured, he shows, what is of greater utility, that consumption almost invariably begins when the system or the blood alone is surcharged with humors and per contrary that the malady never comes into being when the blood and system are in their normal state and surrounding. It is not known exactly how the disease begins. There must be a tissue full of impurities to be acted upon and a microbe to act. Whether the latter is brought by the air we breath, or the water we drink, or whether it obtains entrance through the skin and so reaches the circulation. Judging from common-sense it would seem that in Phthisis, the germs are conveyed by the air; in consumption of the stomach and liver from germs contained in our food and drink, and in lupus from germs which have effected a lodging within the outer skin. In all these cases, no matter how much they vary in degree or kind, one fact is always patent, the tissue attacked and the blood are unhealthy and are contaminated with the humors of the physical system. It is this which renders a person so easy a prey to his minute enemies. In a condition of fine health, nature resists a microbe the same as one would a wildcat. In ill-health, there is no energy wherewith to resist the attacks of foreign elements. The system yields to the first-comer. If the impurities are still larger in amount, what is called a typhoid condition obtains. Under this state of affairs a slight ailment becomes fatal and the smallest attack of a microbe becomes a galoping consumption. Prof. Koch's studies have shown that every one runs the risk of consumption who permits, through thoughtlessness, his system to become surcharged with impurities or is compelled against his will to undergo that process by the power of some other disease. So far as the germs are concerned, they are well-nigh universal. Only on the summits of high mountains are they unknown. On the ocean they are not, but they may be found in every ship and steamer that leaves port. In high dry atmospheres like those of Denver, Quito, and many places in Switzerland they are comparatively rare. In every other place they abound in exhaustless swarms. Wisdom, therefore, should oblige every person to keep his blood so pure that the germs of consumption can obtain no foothold within his organization. It is the duty of the individual toward himself and still more the duty of the parent toward a child. This should be done by the regular use of Ayer's Sarsaparilla, a simple scientific preparation, which, for forty years, has been recognized in America and Europe as the best if not the only blood-purifier in existence. Its action is rapid, but imperceptible so far as unpleasant sensations are concerned. Its virtue lies in the fact that it attacks the humors in the circulation and tissues, breaks down or destroys them and expells what remains through the lungs, pores, kidneys and bowels. At the same time it exerts a strong tonic influence upon the great functions of the body and changes morbid, inactive or torpid condititons into those which are normal, active and efficient. Whenever the system begins to run down, when people complain of "that tired feeling," when growing children lose their appetite or cannot sleep at night, it is a sign that the blood requires cleaning and that Ayer's Sarsaparilla should be employed to restore the individual to perfect health and strength.

BUSINESS NOTES.

BRAIN WORKERS

Use Horsford's Acid Phosphate. Dr. C. H. Goodman, St. Louis, Mo., says: "Have used it for several years with especially good results in nervous prostration, the result of mental efforts, also in sleepless conditions of brain workers."

THE FOOT OF A HORSE.—The foot of a horse is oue of the most ingenious and unexampled pieces of mechanicism in animal structure. The hoof contains a series of vertical and thin laminæ of horn, amounting to about 500, and forming a complete lining to it. In this are fitted as many laminæ belonging to the coffin bone, while both sets are elastic and adherent. The edge of a quire of paper, inserted leaf by leaf into another, will convey a sufficient idea of the arrangement. Thus, the weight of the animal is supported by as many elastic springs as they are laminæ in all the feet, amounting to apout 4,000, distributed in the most secure manner, since every spring is acted on in an oblique direction.

RIVERS FLOW "UP HILL."—All along rivers that flow toward the equator have the mouth higher, theoretically, than the source. The polar diameter of the earth is 7,899 miles, while the equatorial diameter is nearly 7,925 miles. Thus it is thirteen miles further from the centre of the earth to the equator than it is to either pole, so that it is steadily "up hill," theoretically, from the poles to the equator. The mouth of the Mississippi is more than four miles further from the centre of the earth than the source, or four miles "up hill." The explanation is that the same force—the centrifugal force of the earth—which caused the earth to "bulge out" thirteen miles at the equator, causes the waters of the ocean and rivers to tend toward the equator, so that the ocean, though it has a straight down grade of thirteen miles from the equator to the poles, has no tendency to run down hill, but merely keeps its apparent level surface. The rotation of the earth, therefore, makes the real "level of the sea" an inclined surface from the equator to the pole. If the earth did not rotate, the water would all flow the other way.

Indigestion

Horsford's Acid Phosphate.

A preparation of phosphoric acid and the phosphates required for perfect digestion. It promotes digestion without injury, and thereby relieves those diseases arising from a disordered stomach.

Dr. E. J. WILLIAMSON, St. Louis, Mo., says: "Marked beneficial results in imperfect digestion."

Dr. W. W. SCOFIELD, Dalton, Mass., says: "It promotes digestion and overcomes acid stomach."

Dr. F. G. McGAVOCK, McGavock, Ark., says: "It acts beneficially in obstinate indigestion."

Descriptive pamphlet free.

RUMFORD CHEMICAL WORKS,

PROVIDENCE, R. I.

BEWARE OF SUBSTITUTES AND IMITATIONS.

Caution:—Be sure the word "Horsford's" is *printed* on the label. All others are spurious. Never sold in bulk.

Fine Table Wines

From our Celebrated Orleans Vineyard.

Groot, Haraszthy & Co

Producers of the

ECLIPSE CHAMPAGNE,

530 Washington St.

SAN FRANCISCO.

GENERAL AGENCIES:

NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOS. H. R. PEEBLES' SONS CO., 73 West Fourth Street.
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.

HARTSHORN'S SHADE ROLLERS.

Who has not blessed Mr. Hartshorn for his invention, which did away with the annoyances of the old-fashioned shades, which would never "stay but?" If we remember the multiform troubles with the original shades which we had to roll up by hand, tie, and then attempt to balance, and the first improvement upon these by the cord rollers, which, though a great step forward, gave us the dissappointing experiences of stretching cords and cords out of the groove, mounting on tipping chairs to get them in order again, we feel thankful for the ingenious invention of the spring roller. As Mr. Hartshorn was the pioneer, he has steadily kept his improvements in the van; and, despite numerous imitators, there is no better spring roller made than Hartshorn's.

WOMEN WORKERS.—In Germany more than 130,000 married women work in shops and factories.

AN ACTIVE CHARITY.—Berlin's Society for the Homeless sheltered last year 108,000 men and 15,500 women. Since 1870 the society has assisted, with lodgings, baths, breakfasts, and medicinal care, 2,209,000 persons.

CHESS REFORM.—Mr. John Bland, a chess player, broposes to revolutionize the game by making the board nine squares wide, and adding besides a pawn another piece, to be called the "Premier," possessing the combined powers of queen and knight.

LIGHT WIRES.—The overhead wires originally selected for the telephone service in London were galvanized, and weighed 224 pounds to the mile: but these are now replaced by silicon bronze, weighing 36 pounds per mile.

DEATH TO BUGS.—A new insecticide is the subject of a Florida patent. It is a compound of sulphur, caustic soda, chloride of sodium, nitrate of potassa and water, the invention including the process by which the sulphur is reduced from a solid to a fluid condition.

GERMAN STRIKES.—In 1890 there were in Germany 1,131 strikes, in each of which more than 10 men participated. The total number of strikers was 394,440. In 420 cases they were entirely unsuccessful; in 468 partially successful; in 187 they gained all they demanded.

ARTIFICIAL RUBIES.—Two chemists, Freny and Verneuil, who have been experimenting for several years in the production of artificial rubies, report that they have now overcome the dificulty that has hitherto prevented them from producing large rubies, and they can make them of reasonable size.

STRENGTH OF ALUMINUM.—Aluminum bronze of ten per cent. it is claimed, has a working strength of 310,000 pounds, as against 80,000 pounds for steel; hence, when the time comes, which cannot be far distant, for building bridges of aluminum or its alloy, we shall have a structure about one-third the present weight, and much stronger.

VALUABLE STUDY.—The *Chemical News* says: "Chemistry should be studied as a means of intellectual training. It teaches us the important arts of close and accurate observation, and of drawing correct inferences from the facts recognized." "These important arts can never be mastered by the most prolonged study of classics and mathematics." "Hence, if we regard education as intellectual discipline rather than the mere absorption of a number of facts, we shall find some one of the branches of natural and physical science absolutely essential and indispensable." "And under most circumstances chemistry will prove the most appropriate subject."

AMERICAN ENTERPRISE.—George M. Pullman has, it is announced, closed a contract to place a large number of sleeping cars on Australian lines. The fulfilment of this contract involves a novel scheme, for the carrying out of which the workmen in the little town of Pullman are busily preparing. The parts of the cars will be made here, of course, and then the whole outfit in sections will be shipped to Australia ready to be put together there. Mr. Pullman will send along a colony of his best artisans, and in a temporary plant to be put up near Melbourne, the finishing touches upon the cars will be put. The workmen who are being enlisted for the expedition go with the understanding that they will be absent at least one year.

CLEVELAND'S SUPERIOR Baking Powder.

The Official Reports of the
United States Government, 1889,
Canadian Government, 1889,
New Jersey Commission, 1889,
Ohio Food Commission, 1887,
prove that Cleveland's is

THE STRONGEST

of all the pure* cream of tartar baking powders.

*Ammonia or alum powders, whatever their strength, should be avoided as injurious.

25 CTS. PISO'S CURE FOR CURES WHERE ALL ELSE FAILS. Best Cough Syrup. Tastes good. Use in time. Sold by druggists. CONSUMPTION 25 CTS.



A HIGH-GRADE PIANO

AT A VERY MODERATE PRICE.

NEW DESIGNS. FANCY WOODS.

Terms Easy. + Monthly Instalments.

TWO, THREE AND FOUR PEDALS.

Catalogues, Prices, Terms, Etc., sent to any address.

EVERY PIANO WARRANTED 5 YEARS.

(Mention this Paper.)

THE ORIGINAL AND GENUINE (WORCESTERSHIRE SAUCE).



LEA & PERRINS' SAUCE

In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—

Lea & Perrins

Beware of Imitations; see that you get Lea & Perrins'

For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS. NEW YORK.

THE N. Y. HAY EXCHANGE BULLETIN.

OFFICIAL REPORT OF THE HAY AND STRAW MARKET AT NEW YORK.

COMMISSION SALESMEN.

NOTICE.

These names are arranged alphabetically.

WM. AFFLECK & CO.,
Commission Merchants in
HAY AND STRAW,
Office No. 5,
N. Y. Hay Exchange Building.

J. ALSDORF,
Commission Dealer in
HAY AND STRAW,
33d Street and 11th Ave.,
NEW YORK.

E. A. DECKER. F. W. TOMPKINS.
DECKER & TOMPKINS,
Commission Merchants in
HAY, STRAW, GRAIN,
Office: 16 New York Hay Exchange Building.

L. S. DILLENBACK. T. O. PECK.
DILLENBACK & PECK,
MAIN OFFICE:
Room 0, N. Y. HAY EXCHANGE, N. Y. City.
STOREHOUSE AND BRANCH OFFICE:
101, 103 and 105 North 5th St.,
and 152 and 154 Berry St.,
Palmer's Dock. Brooklyn, E. D.

EDWIN B. DUSENBERRY,
COMMISSION MERCHANT,
And Wholesale Dealer in
HAY, STRAW AND GRAIN.
No. 1, N. Y. Hay Exchange, New York.

THOS. FONDA & CO.,
Commission Merchants
And Dealers in Hay, Straw, Grain and Country Produce,
13 & 14 N. Y. Hay Exchange Building.

N. A. FULLER,
COMMISSION MERCHANT IN
HAY AND STRAW,
33d Street and 11th Ave.,
NEW YORK.

J. H. Hubbel. Oscar Kent.
HUBBEL & KENT,
HAY AND STRAW
COMMISSION MERCHANTS,
New York Hay Exchange Building.
Personal attention guaranteed all consignments
Correspondence solicited.

THEO. P. HUFFMAN & CO.,
COMMISSION MERCHANTS
In Hay, Straw, Grain, Feed, &c.,
648 & 650 West 34th Street,
Bet. 11th & 12th Aves., N. Y.

The N. Y. Hay Exchange is located at 601 W. 33d St., corner 11th Avenue.

Only the cards of members of the N. Y. Hay Exchange appear on this page.

RULES FOR GRADING HAY AND STRAW

As Adopted by the N. Y. Hay Exchange.

CHOICE OR PRIME HAY—Shall be pure timothy, properly cured, bright, natural color, sound and well baled. No. 1—Shall be timothy, not more than one-eighth (⅛) mixed with "red top" properly cured, bright natural color, sound and well baled. No. 2—Shall be timothy, not more than one-quarter (¼) mixed with red top and blue grass, properly cured, good color, sound and well baled. No. 3—Shall include all timothy not good enough for No. 2, proportionately mixed with blue grass, red top, and clover, sound and well baled. SHIPPING—Shall include all hay not good enough for other grades, and may be natural meadow, free from wild or bog grass, and must not contain over one-third (⅓) clover, sound and well baled. CLOVER MIXED—Shall include all hay containing not over two-third (⅔) clover, and one-third (⅓) timothy, properly cured, sound, and well baled. CLOVER—Shall be medium grown, properly cured, good color, sound, and well baled. NO GRADE OR REJECTED HAY—Shall include all hay badly cured, musty, stained, or in any way unsound.

No. 1. RYE STRAW—Shall be clean, bright, long Rye, in bundles, sound, well and securely baled. No. 2—Shall be long Rye, in bundles, sound, well and securely baled. SHORT RYE—Shall be clean, not bundled, sound, well and securely baled. OAT STRAW—Shall be clean, bright, sound, well and securely baled.

In the New York market bale-wood is weighed in without tare. In all other markets it is deducted.

These quotations for choice, No. 1 and No. 2 hay are for large bales. 5c. per cwt. less when in perpetual press bales.

The New York quotations are per cwt. At other points, per ton.

NEW YORK, March 30, 1891.

The following are the market prices to-day at New York.

	Large Bales.	Small Bales.
Fancy Hay	60c @ 70	
No. 1	55 @ 60	
No. 2	50 @	
No. 3 and Shipping	45 @	
Clover Mixed	50 @ 55	
Clover	4[illegible] @	
Long Rye Straw	80 @ 85	
No. 2 "		
Oat Straw	35 @ 40	
Wheat Straw	35 @ 40	

Receipts week ending March 28, as follows:

Via N. Y. Central	190 cars.
" West Shore	120 "
Other roads by Lighter, 34th Street	30 "
Total	340 cars.

Receipts this week have been somewhat heavier. The trade was quite fair, and stock on hand is no larger than it was a week ago. No. 3 on shipping shows a slight advance in price, but other grades remain about the same. Long Rye Straw, if very nice, would bring 90 cents.

H. B. Jenkins. F. S. Williams.
JENKINS & WILLIAMS.
COMMISSION MERCHANTS IN
HAY, STRAW AND GRAIN,
HAY EXCHANGE.

JOHN KERWIN & SON,
DIRECT RECEIVERS OF
HAY, GRAIN and GENERAL PRODUCE
DEPOT AND STOREHOUSES,
Palmer's Dock. Nos. 97 & 99 North Fifth Street.
BROOKLYN, N. Y.
SHIPPING ADDRESS, PALMER'S DOCK, BROOKLYN, N.Y.
West Shore R. R., N. Y. C. & H. R. R. R., N. Y. L. E. & W. R. R., Pennsylvania R. R., D. L. & W. R. R., Lehigh Valley R. R., and connections.

W. J. OVEROCKER. PERRY HATCH.
OVEROCKER & HATCH,
Commission Merchants in
HAY, STRAW AND GRAIN.
33d Street & 11th Avenue, New York.
References: West Side Bank, New York City; Exchange Bank, Holly, N. Y.

Gilbert Plowman, NEW YORK. Spencer Billington, FORT HUNTER, N. Y.
PLOWMAN & BILLINGTON
COMMISSION MERCHANTS,
HAY, STRAW, GRAIN, &c.
No. 15 N. Y. Hay Exchange,
33d St. & 11th Ave., NEW YORK.

JAMES ROZELL & SON,
Commission Merchants and Wholesale Dealers in
HAY, STRAW, GRAIN AND COUNTRY PRODUCE.
N. Y. Hay Exchange, New York.

SKINNER, BLOOM & CO.,
Successors to Rogers, Skinner & Co.,
COMMISSION MERCHANTS
And Dealers in
Grain, Flour, Hay, Feed, Meal, &c.,
74 CORTLANDT STREET, - NEW YORK.
Barge GYPSIE, Foot Bridge St., Brooklyn.

H. SLINGERLAND,
Barges MERCHANT and HARVEST QUEEN
Foot of West 11th Street,
HAY AND STRAW.
Also, 33d and 35th Streets, and all Railroad terminals. Special facilities for lighterage free goods.

CHARLES F. SWAN,
Commission Merchant in
HAY, STRAW & GRAIN,
At all the Railroad Terminals
in New York, Brooklyn, Jersey City, &c.
MAIN OFFICE,
108 BROAD ST., NEW YORK.

TITUS, WELLS & WILLETS,
Commission Merchants and Dealers in
HAY AND STRAW,
133 Roosevelt St.,
NEW YORK.

G. E. Van Vorst. James M. Hillery.
VAN VORST & CO.,
COMMISSION MERCHANTS,
HAY, STRAW AND GRAIN
N. Y. Hay Exchange, 33d St., & 11th Ave.
562 & 564 West 34th St., NEW YORK.

NOTICE.

These names are arranged alphabetically.

HOSMER, CRAMPTON & HAMMOND,

NO. 43 COMMERCIAL STREET,

BOSTON.

COMMISSION MERCHANTS,

HAY, STRAW, FLOUR & GRAIN.

E. B. HOSMER, G. W. CRAMPTON, BENJAMIN HAMMOND, A. L. ROBINSON.

BOSTON HAY AND STRAW MARKET.

Hay, choice to fancy, in large bales	$13.00 to $14.50
Hay, choice to fancy, perpetual pressed bales	12.50 to 13.00
Hay, fair to good	11.00 to 12.00
Hay, poor to ordinary	9.00 to 11.00
Hay, Clover and Clover mixed	9.00 to 11.00
Hay, swale	8.00 to 8.50
Straw, Rye, good to prime	17.00 to 17.50
Straw, Oat	8.00 to

BOSTON, March 28th, 1891.

Receipts for the week are 370 cars of Hay and 18 cars of Straw; corresponding week last year, 187 cars of Hay and 5 cars Straw. Receipts of hay have increased materially this week over what they have been for two or three weeks previous; the market is quiet in consequence. We quote the market barely steady at quotations. Rye Straw is quiet. Oat Straw is very dull.

H. F. WILSON,
WIRE BALE TIES,
458 WEST 38th STREET, New York.

THURSTON'S IVORY PEARL TOOTH POWDER
WILL KEEP THE TEETH IN PERFECT CONDITION AND THE GUMS HEALTHY.
Price 25 & 50 Cents PER BOTTLE.

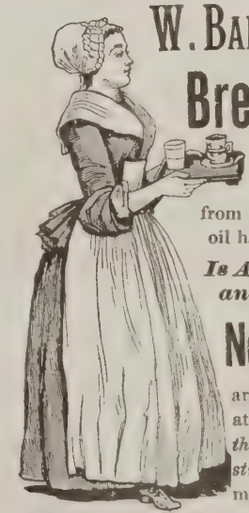
NATURAL MINERAL PURGATIVE WATER.
From the Springs of
VILLACABRAS.
Prescribed by the Highest Medical Authorities.
Stronger effects than any other under smaller volume. No smell—no repulsive taste—no after-constipation—no gripes. As a daily laxative it can be taken either pure or mixed with milk, tea or broth
Sold by all Good Druggists.

HARTSHORN'S SELF-ACTING SHADE ROLLERS
NOTICE SCRIPT NAME OF Stewart Hartshorn ON LABEL, AND GET THE GENUINE
HARTSHORN

HAMMOND'S
CELEBRATED
Calumet Oleomargarine
Strictly pure, cheap and healthful
Ask your grocer for it.
Put up in packages of all sizes, also prints and rolls.
C. H. HAMMOND CO.,
607 to 615 THE ROOKERY,
CHICAGO.
Also offices at Boston, South Omaha, Neb., and Hammond, Ind.



C-U-R-E-S
DIARRHŒA, DYSENTERY,
MALARIA,
all ailments of the bowels. Is an anti-dyspeptic, and a DELICIOUS INVIGORATIVE. Leading Physicians prescribe it for ADULTS AND CHILDREN. *FOR SALE* by Druggists and dealers.
RHEINSTROM BROS., DISTILLERS OF FINE LIQUEURS,
54, 56, 58, 60, 62 E. 3rd STREET, CINCINNATI, O.

GOLD MEDAL, PARIS, 1878.
W. BAKER & Co.'s
Breakfast Cocoa

from which the excess of oil has been removed,
Is Absolutely Pure and it is Soluble.
No Chemicals
are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.
Sold by Grocers everywhere.
W. BAKER & CO., DORCHESTER, MASS.

We can save you Fifty Dollars when you Build. See

A complete set of Plans to build from, simply state about price of dwelling desired. 25 cts. in stamps. Our book "Beautiful Homes." 25 cts. Our monthly book "The National Builder." 25 cts. Address
The National Builder, Adams Exp. Bldg., Chicago, Ill.

THE GREAT AMERICAN TEA COMPANY

LADIES

GET UP ORDERS.
Entire New Departure.
A HANDSOME PRESENT TO EVERY SUBSCRIBER.

THE GREATEST INDUCEMENTS
EVER KNOWN TO INTRODUCE OUR NEW GOODS.

If you enjoy a cup of **Delicious Tea** send in your orders. 3½ lbs. Fine Tea by mail on receipt of $2 and this "ad". Beautiful premiums given away with $5 orders and upwards. The **most extraordinary bargains** ever offered, during the next thirty days. China Tea Sets and Lamps with $10, $15 and $20 orders to introduce our excellent **New Crop Teas.** Formosa and Amoy, Oolong, Congou, English Breakfast, Japan, Imperial, Young Hyson, Gunpowder, Sun Sun Chop and Mixed. Good mixed teas 20c. per lb. Headquarters in United States for Fine Teas. One pound of our tea will go farther than three pounds of trash. Thirty years' national reputation for selling **Pure Goods Only.**

THE GREAT AMERICAN TEA COMPANY,
P. O. BOX 289. 31 and 33 Vesey Street, New York.

PUBLICATIONS OF THE

ANALYST PUBLISHING CO.

THE AMERICAN ANALYST.
Weekly. Every Thursday. $1 per year.

THE ROOFER, TINNER AND SHEET-IRON WORKER.
Monthly. 15th each month, $1 per year.

THE LEATHER MANUFACTURER.
Monthly. 1st each month. $3 per year.

Reliable agents and representatives wanted everywhere on liberal terms. Address

ANALYST PUBLISHING CO.
19 PARK PLACE, NEW YORK.



THE CENTURY DICTIONARY comes nearer to being a complete catalogue of the English language than any dictionary ever published. But it is not merely a dictionary: it is an encyclopedia of common things as well. It has been ten years in preparation. The leading scholars of the country have contributed to its pages. It is the latest dictionary and it ought to be, and is, the best.

A large descriptive pamphlet containing full-size sample pages, etc., will be mailed to any one sending five 2-cent stamps to
THE CENTURY CO., 33 East 17th St, New York.

A LARGE AND VALUABLE

Cook Book Free



We are enabled to offer our readers a most attractive combination, by which all may obtain a copy of the "Modern Cook Book" absolutely free. This handsome and valuable Cook Book has

320 Pages, Over 1,200 Recipes and Hundreds of Illustrations.

The recipes are the choicest selections from 20,000 that were received from practical housewives living in all parts of the United States, to which were added hundreds of the newest, best and most practical recipes of this progressive age, all of it set in new and large type, and the whole book handsomely illustrated.

IT HAS A BEAUTIFUL, ILLUMINATED COVER.

It is an elegant and admirably arranged volume of recipes for practical, everyday use. Among its points of excellence are the following:

Practical Suggestions to Young Housekeepers, Necessary Kitchen Utensils, Suggestions and Recipes for Soups, Fish, Poultry, Game, Meats, Salads, Sauces, Catsups and Relishes, Breakfast and Tea Dishes, Vegetables, Bread, Biscuit, Pies, Puddings, Cakes, Custards, Desserts, Cookies, Fritters, etc. Also for Preserves, Candies and Beverages; Cookery for the Sick, Bills of Fare for Family Dinners, Holiday Dinners, etc. A Table of Weights and Measures; Chapters on the Various Departments of Household Management and Work.

IT WOULD BE CHEAP AT $1,

As it is the Latest, Best and Most Practical Cook Book Published, More Nearly Meeting the Wants of American Homes than any other.

Any person accepting our offer will receive this paper one year, and also that charming home journal, the Ladies Home Companion, one year, together with the Cook Book, all mailed, postpaid, for less than the regular price of the two papers alone.

The Cook Book is offered absolutely free to induce thousands of our readers to become acquainted with the Ladies Home Companion, the publishers looking to the future for their profit, as they believe you will always want the Ladies Home Companion if you try it one year. Do not lose this opportunity to get the newest and best Cook Book free.

THE LADIES HOME COMPANION is a large and popular 16-page journal, published **twice a month,** and gives information about those things which ladies particularly wish to know, and is mostly written by ladies. **Original or Selected Stories** by eminent authors are found in each issue. A special feature is the variety of departments, each of which is conducted by a special editor. It gives the latest **Fashions,** arranged for practical use; timely hints to **Housekeepers;** cheering and helpful talks with **Mothers;** valuable information for lovers of **Flowers;** a pretty and pleasant page for pretty and pleasant children. All handsomely illustrated. It is not an ultra fashion paper, but a journal for the home circle, full of common-sense ideas and suggestions for home happiness and comfort.

OUR OFFER Send us $1.00 and you will receive **The American Analyst** one year, and also the **Ladies Home Companion** one year (24 numbers). And every one accepting this offer will also receive the above Cook Book, postpaid.

This offer is extended to **all** our subscribers. Subscribers whose subscriptions have not expired, or those recently renewed, are privileged to accept this GREAT OFFER, in which case their term of subscription will be extended one year.

Address THE AMERICAN ANALYST, 19 Park Place, New York.

"BILLET"

are

Carefully Selected
French Sardines,
Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,
HOWARD STREET, BOSTON, MASS.

To Subscribers, Readers and Advertisers.

SUBSCRIBERS' attention is called to the great variety of interesting and instructive subjects treated in this number. We respectfully ask the co-operation of our subscribers in extending our Subscription list, which will enable us still further to increase the value of the AMERICAN ANALYST to them.

The CASUAL READER is specially requested to examine our liberal premium offer.

ADVERTISERS who do not know of this Journal already, are respectfully referred to article headed "A Business Benefit."

ALL are kindly requested to peruse this number thoroughly.

The AMERICAN ANALYST can be had at any news stand in the United States. Any newsdealer will take orders for it, the American News Company being our wholesale agents. All postmasters will receive subscriptions.

Tabasco Pepper Sauce

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

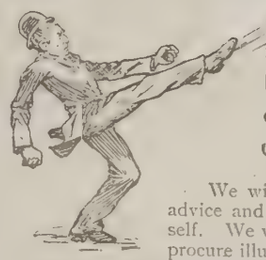
The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced, by connoisseurs, to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY,

NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

Don't kick



because your business is bad, but advertise If you don't know how to, write to us and we will tell you.

We will prepare your advertisement or give you advice and assistance to aid you in preparing it yourself. We will have the advertisement set in type and procure illustrations if any are needed. When a satisfactory advertisement has been produced we will furnish proofs and an electrotyped pattern to be used in duplicating the advertisement if the display or illustration make an electrotype desirable.

Address GEO. P. ROWELL & Co.,
Newspaper Advertising Bureau,
10 Spruce St., N. Y.

NATRONA BI-CARBONATE OF SODA.

ABSOLUTELY PURE.)

The nature of the raw material from which NATRONA BI-CARBONATE OF SODA is made—viz., kryolith, a mineral containing *pure sodium*—insures a purity and uniformity of product which cannot be obtained from any other known material. In making BI-CARB. SODA from any other raw material, the use of sulphuric acid is a necessity, but none is used in any part of the process of making NATRONA BI-CARB.; hence its entire freedom from the slightest trace of arsenic, which is always present in ordinary soda. Its absolute purity and entire freedom from all traces of *sulphate of soda*, common salt and other impurities, render NATRONA BI-CARB. NEARLY TASTELESS, and being bolted through the finest bolting-cloth, insures the finest stage of division.

To these indisputable facts the attention of CONSUMERS of soda is specially called. They are IMPORTANT, and should influence both those who use and those who sell soda, to buy and sell NONE BUT THE BEST.

The NATRONA BI-CARB. Soda is kept in stock by almost every wholesale druggist and grocer throughout the United States, of whom it may be ordered.

Natrona Bi-Carb. Soda is unequaled by any other brand of English or American Manufacture.

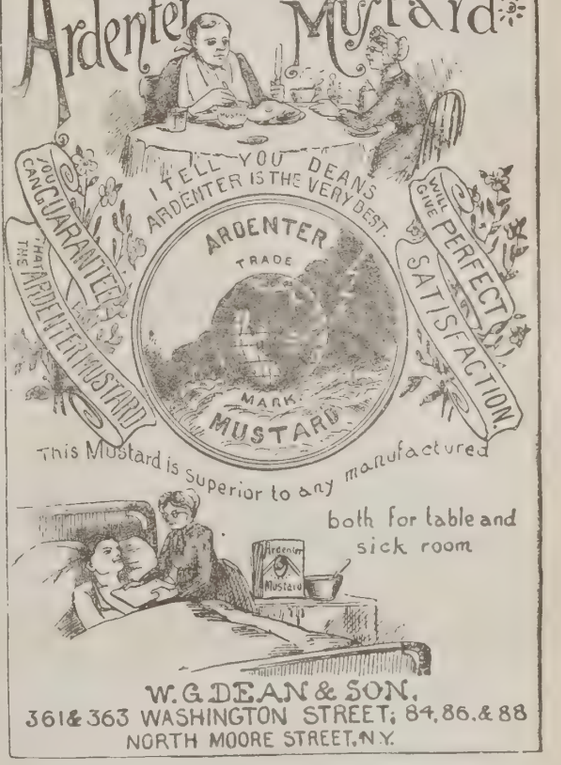
PENNA. SALT MANUFACTURING CO.,

NATRONA CHEMICAL WORKS. PHILADELPHIA, PA.

ESTABLISHED IN LONDON, 1631.

DEAN'S PATENT

Ardenter Mustard



W. G. DEAN & SON,
361 & 363 WASHINGTON STREET; 84, 86, & 88
NORTH MOORE STREET, N.Y.

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,
134 Greenwich St., N.Y.

DR. PRICE'S CREAM Baking Powder.

Most Perfect Made

A Pure Cream of Tartar Powder—
Superior to every other known.
Used in Millions of Homes—40 Years the Standard.
Delicious Cake and Pastry, Light Flaky Biscuit, Griddle Cakes
Palatable and Wholesome.
No other baking powder does such work.

Vigoral

FOR

STRENGTH, NOURISHMENT AND REFRESHMENT.

PREPARED BY

ARMOUR & CO.,

CHICAGO,

From their celebrated EXTRACT OF BEEF, further strengthened in muscle-forming constituents by the addition of pure beef in powdered form.

Vigoral is seasoned ready for use and makes a delicious hot drink for cold weather.

SWIFT'S

CHOICE

Chicago Dressed Beef

AND

MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,

UNION STOCK YARDS,

CHICAGO, ILLS.

We shall be glad to supply our readers with any periodical published at club rates.

Send us a postal naming periodical and we will quote you prices.

ANALYST PUBLISHING CO.,
19 Park Place, New York.

GLENN'S SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,

C. N. CRITTENTON,

115 FULTON STREET,
NEW YORK.

Be progressive and keep abreast of the times. Avoid dyspepsia by using **Lard Compound** and **Cottolene,** a substitute for lard.

The highest medical authorities pronounce them healthful; and expert cooks commend them.

Our **Clairette** brand of cotton oil soap is the purest and best laundry soap in the market; as pleasant to the hands as genuine castile.

N. K. FAIRBANK & CO.,
CHICAGO AND ST. LOUIS.

The Standard of Excellence.

KINGSFORD'S

OSWEGO

Pure and Silver Gloss



STARCH

KINGSFORD'S
OSWEGO CORN STARCH
FOR
Puddings, Custards, Blanc-Mange, Etc.
THE PERFECTION OF QUALITY.
WILL PLEASE YOU EVERY TIME.
Always ask your Grocer for these goods.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 15. NEW YORK, THURSDAY, APRIL 9, 1891. WHOLE No. 215

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - $1 per year.
Single Copies, - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.

Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.

Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,

H. LASSING, M. D., } *Editors.*
T. P. McELRATH, }

No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

Ancient Vertebrates 173
Baths and Bathing 170
Chemistry of the Sun 172
Crystalline Glass 174
Domestic Dietetics 173
Eating and Living 173
Editorials 169
Bogus Coffee; Take Care of the Pence; Abraham Lincoln an Inventor; A Kentucky Fizzle.
Hay Market Official Bulletin 176
Power of Water 172
Pure Food in Europe 171
That Other Fellow 172
What Makes Beauty? 171

BOGUS COFFEE.

The Report of the New Jersey State Dairy Commissioner for 1890, which we have just received, contains an interesting paper by Dr. Newton, the former Commissioner, relative to imitation coffee, an account of which has been given by the AMERICAN ANALYST. Some time in 1889 that official had been shown some samples of bogus coffee beans made in Hamburg, Germany. Learning that the article was soon to be introduced in large quantities in the United States, the Commissioner was on the alert, and so effective a look-out did he keep, that within two weeks after the material was offered for sale in his State, it had been detected and exposed, and driven completely out of the market. Trenton was the distributing depot, and the place of manufacture was variously attributed to Philadelphia, Jersey City, and New York, but has not yet been definitely ascertained by the authorities. It is believed that the prompt and decided action of the New Jersey Dairy Commissioner in January, 1890, crushed out the incipient fraud, not only in that State, but throughout the country, for since that period no complaint on the subject has been received from any source. The manufacture of imitation coffee, thus checked, is the first attempt to depart from the beaten track of adulteration. Prior to this it was the custom to mix ground rye, chicory, peas, etc., with ground coffee in varying proportions. In this instance an imitation article was made to mix with the coffee beans themselves, and as the public was taught that there could be no doubt of coffee bought in the bean, it is probable that large quantities could be sold if not early detected. The imitation coffee berries were a very close counterfeit of the real article, being of about the same shape, size, and color of the genuine, and to the casual observer they appeared the same. Close investigation, however, revealed the difference. The imitation berry was a little darker than the genuine, was heavier, had a closer texture, and lacked the thin fibrous skin that is found in the groove on one side of the true berry. The composition of the imitation article was never definitely determined, but it was probably flour or ground crackers or bread, formed in a mould and roasted or baked to the proper color. The samples found in Trenton were mixed with true coffee beans in the proportion of from thirty to sixty per cent.

TAKE CARE OF THE PENCE.

It would be a good thing for the community if people generally could realize the wonders that have been and that always can be accomplished through the accumulating of small savings. It is to promote the recognition of this that in several of our cities depositories have been established known as "penny banks," for the benefit of boys and others whose accumulations can only be measured, at the beginning at least, in coppers. New York, Boston, Baltimore and Detroit now have such "penny banks," or preliminary savings associations. They are established by benevolent citizens who associate themselves for that purpose, and are meant simply to help small savers in getting a start at the regular savings banks. The New York plan is this: The society or trustees having the matter in hand appoint certain local agents in different parts of the city, easily reached If a boy, or any one else, has five cents or one cent with which he wishes to start an account, he takes it to the office of one of these agents, deposits it, writes his name and address on a slip prepared for that purpose, and is given a stamp card on which his name is written and a five-cent or one-cent stamp, as the case may be, is pasted in one of thirty-six squares. Whenever the same depositor has another cent, or another nickel, he takes it to the same place and has another stamp, corresponding with the amount pasted in another square of his card. At last his card is filled, and then he receives the whole amount of his deposit, and is sent to the nearest savings bank to begin a deposit there. Once started in this way, he is likely to become a regular depositor. He may continue to go, however, to the "penny bank" with his coppers. The New York penny savings system succeeded in bringing out, in fourteen months, more than fifteen thousand dollars in deposits. It is probable that but for this system none of its money would have been saved at all, and much of it would have contributed to habits of spending instead of to habits of thrift. Several European countries have long had "penny banks" of this sort. Paris has more than two hundred offices or establishments for copper savings, and in thirteen years that they have been in existence fifteen millions of dollars have been saved through them. This is a vast amount, but a great number of people have contributed to make it up. In one year some sixty thousand children in Paris contributed thirty-four thousand dollars. All this money goes into regular and safe savings banks, and increases their deposits by more than the amount directly deposited by the "penny banks," since it starts accounts which would otherwise never be started.

ABRAHAM LINCOLN AN INVENTOR.

In connection with the forthcoming Patent Centennial, to which we referred in a recent issue of the AMERICAN ANALYST, the public will be interested to learn that Abraham Lincoln was an inventor, and received a patent on the 22d day of May, 1849, numbered 6,369, for an improved means of combining adjustable buoyant air-chambers with steamboats or other vessels to enable their draft to be readily lessened, to permit them to pass over bars or through shallow water without discharging their cargoes. These adjustable buoyant air-chambers were secured to the sides of the vessel (which in this instance was an old style Ohio steamboat), and were formed with top and bottom portions composed of a plank or plate of metal of suitable stiffness, and with flexible side portions of India-rubber, or textile material thoroughly waterproofed. These buoyant air-chambers were very similar in construction and operation to an accordion or a blacksmith's bellows. The vessel was also supplied with a main shaft or shafts, and with sliding spars or shafts, the latter passing down through the buoyant chambers and made fast to their bottoms; also with a series of ropes and pulleys, whereby, by turning the main shaft or shafts in one direction, the buoyant air-chambers would be forced downward into the water, and at the same time expanded and filled with air for buoying up the vessel by the displacement of the water; and by turning the shaft or shafts in an opposite direction, the chambers would be contracted into a small space and secured against injury. It is also stated that President Lincoln was the inventor of the very ingenious method of emptying boats of water

when they had become so filled that bailing was necessary. He bored a hole in the bottom of the boat and by heading the boat up stream in an opposite direction to that in which the tide was moving, a suction was formed which very quickly drew out the water through the opening bored in the bottom of the boat.

A KENTUCKY FIZZLE.

We had occasion a few weeks ago to refer to the *Aluminum Age*, an intermittent affliction to which the people of Newport, Kentucky, were threatened by one Charles L. Hartsfeld. The affliction, however, does not seem likely to trouble that community for any protracted period, as the third issue of the journal in question contains a pathetic appeal for somebody to come along and conduct its editorial management. A "trade journal of progressive information," that has no editor, and that publishes its advertisements gratuitously, as is the case with our esteemed contemporary, is not likely to prove a very remunerative nor a very long-lived enterprise. From present indications the earliest requirement of the concern, instead of an editor, will be for a coroner to sit upon its remains.

BATHS AND BATHING.

HOW TO PROPERLY APPROACH GODLINESS THROUGH THE PORTAL OF CLEANLINESS.

From earliest times bathing has been practised by nearly every people for cleanliness or pleasure. So great was the faith of the Ancient Jews in the importance of cleanliness for physical and moral well-being that bathing, washing and cleansing the body was enjoined upon them by the Ceremonial Law, and was practised as a part of their religious duty. The Ancient Greeks looked upon bathing as a means of retaining and restoring bodily vigor, and according to Homer, warm baths were used after exercise and fatigue. The earliest form of bathing was in plunging in running rivers, and was indulged in by all classes. Public baths were established originally by the Lacedemonians, who invented the hot air bath (the Turkish bath of to-day). Latterly these were adopted by the Greeks, and although they used them to a great extent, they were built on a small scale, as compared to the magnificent baths which eventually sprang up among the Romans. After the time of Maecenas, who built the first public bath at his own expense, each emperor, as he wished to ingratiate himself with the people, lavished large sums from the revenues of the State in the construction of public baths, which were fabulous in their extent and the beauty of their appointments. Many of these structures covered entire squares and were adorned with every architectural beauty. Within, were marble halls and colonnades decorated with the most beautiful frescoes and mosiacs by the masters. These buildings included not only bathing apartments, but gymnasia, libraries and, sometimes, theatres. The baths indeed became one of the greatest luxuries of the people; at one time no less than eight hundred public baths, or thermæ, as they were called, existed within the walls of the Imperial City. Wherever the Romans went and settled, they erected baths, and in many places where hot springs were found, they made use of the natural waters. The Mohammedans also adopted the hot baths and carried them into Spain. The Turks, at a later time, extended them on the Continent. At the time of the Reformation they are spoken of as being common in France, Germany and Belgium. Though these were, for the most part, hot baths, and were used as a luxury, cold baths, and the value of the different baths as a medicinal resource were not lost sight of, but were used more or less extensively in the treatment of diseased conditions. It is probable that many of these baths, especially those erected in the vicinity of natural mineral springs, never fell into absolute disuse, but that some of the celebrated baths of to-day are a direct outgrowth, or rather continuation of the original ones. To-day the high esteem in which the various baths are held by the medical fraternity as a therapeutic measure, is attested by the thousands of people who are sent each year to the renowned European springs to undergo the various "cures" for which they are celebrated. It is gratifying to us, as a people, to know that our own mineral springs, in the number and variety of which no country is richer than the United States, are being studied and developed. I predict that the time is not far distant when the medical profession of this country will have perfected their use to such a degree that they will be as well known and as widely used as in Carlsbad or Vichy. A bath, commonly speaking, is the immersion of the body in a medium different from that of atmospheric air. For medical purposes different media are employed, as hot sand, hot air or vapor, compressed air together with various other chemical solutions, either natural or artificial, and water of different temperature. The most common medium used is water, and the varied effects derived from the use of water depend upon the temperature and mode of application. In the use of mineral waters, the effect, of course, is largely obtained by the action of the mineral waters held in solution, but in the largest modern bathing establishments—as that at Richfield Springs—every facility is provided to enchance the natural effects of the waters by different methods of application. The first and common object of the bath is cleanliness. The great importance of abstersion, and the necessity of keeping the skin clean and in its normal activity will be more fully appreciated when we consider the importance of the function which the skin has to perform. One-third of all the morbid matter in the system arising from tissue change is thrown off through the skin, the other two-thirds being excreted by the kidneys and lungs. The excretion through the skin is accomplished by the action of about two and one half millions of little sweat glands. Each of these glands is surrounded by a plexus of blood vessels, and has a duct extending to the surface, the average length of which is one-fourth of an inch. The aggregate length of these ducts, as computed, is about ten miles. Think of it! A system of human sewerage *ten miles* in extent! The deleterious effect upon the organism caused by a stoppage of this great system of drainage will be perceived at a glance. The effete matters of the body, which in a state of health are excreted by the skin, nature now endeavors to get rid of through the kidneys and lungs. The effect on these organs of the great increase of functional activity necessary to maintain the harmony between tissue waste and tissue repair results in their disease, and the entire system becomes deranged from the poisonous effects of this accumulated matter. Then, too, in health respiration is carried on, in a measure, through the skin by the absorption of oxygen and the giving off of carbonic acid, thus aiding the lungs in their interchange of gases; in this manner a direct effect is produced upon these organs by a checking of the normal activity of the skin. For purposes of cleanliness the hot bath will be found to be of the greatest service. Friction of the body with soap will aid in dissolving and removing the accumulated matter which fills the mouths of the little ducts, and leaves them open and free for the egress of the natural secretions. This bath should be followed by a cold shower to restore the tone to the skin and avoid the depression which always follows prolonged immersion in hot water. Right here I wish to say a word to depreciate the pernicious practice indulged in by many of taking frequent hot baths. For the purpose just mentioned a hot bath is never necessary oftener than once or, at most, twice a week, provided a person takes a daily tepid or cold sponge bath, which should be indulged in by every one as a matter of health. Taken oftener than this, the hot bath is enervating and depressing. It produces a lowered state of vitality, which not only lowers the powers of resistance to disease, but may actually induce disease, by encouraging the development of any latent abnormal condition to which the person may be subject. Now as to the bath as applied for special purposes. The object of any bathing process is to transmit through the patient's skin stimuli to the central nervous system, and by these stimuli to increase arterial and muscular tenacity and encourage tissue metaphosis. This effect is produced by the employment of different degrees of temperature in such order and of such intensity as will produce the precise reaction desired by the physician and the avoidance of subsequent effects which may not be desirable. For convenience in considering the bathing process we divide it into three stages: 1st, *The preparation stage;* 2d, *The treatment stage;* 3d, *The reaction stage.* As the value of the different degrees of temperature varies with the activity of the cutaneous circulation at any moment, it is our object in the *preparation stage* to bring the skin into the best condition to receive the treatment which we propose to employ. Thus, in using the cold bath it is necessary to have the cutaneous circulation in an active condition, to avoid producing shock, and to ensure to our patient the reaction and consequent tonic effect which is the end desired. The very best means of inducing this activity of the circulation is exercise. The prevalent idea that one must wait after exercise to get "cooled off" before taking a cold bath is an erroneous one. As a matter of fact, after the cooling process there is a certain amount of enervation of the cutaneous capillaries, and the process of reaction is not only delayed but diminished in intensity. A distinction should be made, however, between the quickened circulation and glow of the skin after exercise and the overheated and fatigued condition following prolonged physical effort. In the latter case, the shock of the cold bath acting upon the overheated heart would be very apt to result in disastrous consequences, while in the former condition the skin is active and impressionable, and in the very best condition to receive the stimulus which the cold bath will produce. Various other means of preparation may be employed, but they should be adapted to the individual needs of the patient. In the hot bath it is usually desirable to begin the bath at a temperature some degrees lower than that which we desire to use, and approach the higher temperature gradually. In this way we shall avoid the shock which excessive heat would produce, and shall be able to reach a higher degree of heat than could otherwise have been borne. The *treatment stage* consists in the application of one or more of the various bathing processes by means of which we seek to affect the organism for given purposes. The method selected will depend upon the effect which we desire to produce. The class of cases which come under my care at Richfield Springs are for the most part rheumatic or gouty, or are some of the many forms of skin disease. The majority of these cases are treated by the full or tub bath of varying temperature. I find the various douches, however, to be of great service, especially in those cases in which there is a marked neurotic element. The other methods of treatment are too numerous to mention in this paper. Our object in this *reaction stage* is to ensure a tonic condition of the nerves and blood-vessels of the skin as a result of the bathing process. This may be accomplished by a separate bathing process, or by the manner of drying and caring for the patient after the bath. Attention to these details, simple as they seem, will have a very important bearing in determining the success of our treatment. A person should never stand upon a cold surface while the drying process is being carried on. A warm cloth should be provided, and will do much toward encouraging reaction. The exposure of the wet skin to the atmosphere of the room, and the consequent evaporation of the moisture, will retard and diminish reaction. It is necessary, then, after a cold bath to envelop the body in a hot sheet immediately upon coming from the water. The body can be dried by rubbing the hands over it outside the sheet. When the

skin is dry there is no danger in exposing it to the air, and friction is excited by rubbing it briskly with a rough towel. The reaction stage after the hot bath is of very great importance. Hot baths cause relaxation of the capillaries by over-stimulation, and the condition produced is one of partial paralysis; this state is very unfavorable to tonic reaction. The greatest caution should be exercised in employing the hot bath. The condition and temperature of the patient should be carefully looked into and the minutest detail of treatment zealously carried out if we would avoid doing harm. It is a glaring fault, in most bathing establishments where mineral waters are used, that too much dependence is placed upon the mineral ingredients of the water, and too little upon the details of their application. All patients of whatever condition or temperament are subjected to the same routine of treatment. Not only does this course fail to produce the good effect sought, but in many cases it works positive harm to the bather. The ill result following this hap-hazard manner of bathing is attributed to the peculiar action of the mineral matters which the waters contain, whereas the fault really lies in the lamentable ignorance of the director concerning the first principles of bathing. The daily bath, whether it be tepid or cold, should be carried out with the same attention to detail. Without it, we not only subject ourselves to actual danger, but what should be a pleasure becomes a distasteful task.

PURE FOOD IN EUROPE.

ABSTRACT OF THE BELGIAN ADULTERATION LAW.

On the 15th of January regulations fixed by the Belgian Legislature, having for their object the prevention of the adulteration of food products, went into force in Belgium. The first relates to the sale of artificial butters, otherwise called margarine, and stipulates that warehouses, shops, depots, as well as market stalls where margarine is exposed for sale, must present to the public view, in distinct and indelible characters, the inscription, *Sale of Margarine.* Casks, covers and receptacles in which margarine is placed for sale by a shop-keeper, or which are employed by the makers, wholesale dealers, importers, exporters, consignors and consignees of this product, must also bear, in distinct and indelible characters, the words *Margarine.* Further, if the margarine intended for sale is contained in cases, casks, or receptacles not opened, the inscription will mention the name or description of the maker. Articles and wrappers in which margarine is delivered to the purchaser by a retail dealer must bear, in distinct and indelible characters, the word *Margarine,* and the statement of the name or description of the seller must in the inscription immediately precede or follow the word *Margarine.* As regards consignments, the makers, merchants, consignors or consignees of the margarine must state on the invoices and way-bills or bills of lading for each individual consignment that the merchandise despatched is sold as margarine. If the margarine is sold or exposed for sale in the form of cakes or loaves, these must take the form of a cube. They must be marked, moreover, with an imprint bearing the word *Margarine,* as well as the name or description of the maker, unless the receptacles themselves bear these indications. The second of these regulations relates to the sale of food products containing saccharin. It provides as follows: 1. Under the name of products in which saccharin enters (*produits saccharines*) is understood any commodity sweetened by the aid of matters of which the chemical composition and physiological properties differ entirely from those of common sugar, or sugars derived from amylaceous substances (maltose, glucose). 2. Proprietors of breweries, glucose factories, confectionery establishments, factories of liquors, chocolates, and other food products, who use saccharin in their manufacture, are obliged to have the following words painted in large characters, *Saccharin products* (*produits saccharine*) on the outside of the principal entrance to their works and warehouses. Warehouses, shops, depots, as well as stalls and all places of sale where saccharin products are exposed for sale, must exhibit in a conspicuous place, in distinct and indelible characters, the words *Saccharin products.* 3. Casks, covers, or any receptacles in which saccharin products are placed for sale by a dealer, or which are used by the makers, wholesale merchants, importers, exporters, consignors and consignees of these products, must also bear, in distinct and indelible characters, the word saccharin. Further, if the product containing saccharin intended for sale is contained in cases, casks, or receptacles not opened, the inscription will mention the name or social position of maker. 4. Receptacles in which the product containing saccharin is delivered to the purchaser by a retail trader must bear, in distinct and indelible characters, the word saccharinated (saccharine), as well as the name or social position of the trader or retailer. 5. As regards consignments, the makers, merchants, exporters, or consignees of the products containing saccarin must indicate on the invoices and way-bills or bills of lading, for each individual consignment, that the merchandise exported is sold as a product containing saccharin. Two other sets of regulations, which come into force on the 1st October, 1891, deal with the artificial coloring of food products and with the utensils, etc., used in the industry and trade in food products. The first stipulates as follows: It is forbidden to use for the coloring of food products, such as bonbons, pastilles, sweetmeats, pastries, food pastes, confections, marmalades, sirups, liqueurs, wines, fruits, vegetables, etc., intended for sale, any poisonous coloring matter. A list of harmless coloring matters, and a list of colors considered as injurious, will be published by the ministry of agriculture, industry, and public works. It is forbidden to sell, to expose for sale, to detain or to transport for sale any food product manufactured or prepared contrary to the above regulations.

The receptacles or wrappers in which colored or artificially colored food products are contained for sale, either wholesale or retail, must bear, in plain characters, the name and description as well as the address of the seller. The second set of regulations prohibits the use, for the preparation, preservation, or packing of food products, intended for the sale of these commodities, of any utensils, receptacles, or different objects containing any properties which by contact with the substance they contain become poisonous or injurious to health. Lead and zinc, as well as alloys, platings, soldering, and enamels containing these metals, arsenic, antimony, or their compounds, must especially be considered as poisonous or injurious to health in the sense of the present regulations. The above regulations are not applicable to preserve boxes of iron plated with pure tin, of which the solderings are external and are made of an alloy of tin and lead in the proportion of a maximum of ten per cent. of the latter. It is forbidden to sell, to expose for sale, to detain, or transport for sale prepared food substances, preserved or packed in any way contrary to the disposition of the present regulations. It is forbidden to sell, to expose for sale, to detain or transport for sale apparatus, utensils, or articles intended for the preparation, preservation, packing, sale, or manipulation of food products, of which the use is forbidden by the preceding articles. Any apparatus, utensil, receptacle, or article, of which the parts placed or likely to be placed in contact with food products in a factory, warehouse, or store of the commodities contain tin, metallic alloys, enamels, or coloring materials, must bear, in legible characters, the name or position as well as the address of the maker. Contraventions of the law will be punishable with fines prescribed by the law of the 4th of August, without prejudice to the application of the penalties prescribed by the penal code.

WHAT MAKES BEAUTY?

WILL EDUCATION AFFECT PHYSICAL APPEARANCE TO ANY EXTENT?

"What makes beauty?" is the question asked by the London *Spectator.* Beauty is a result of race, of circumstances, such as personal freedom and mode of life, and continuous diet, not of intelligence, and still less of acquisition of knowledge, which latter can benefit only the individual whose features are fixed past serious change before study is even begun. A man or woman inherits his or her face, and mental habitude, though it may affect its meaning, cannot alter its shape. It may even be doubted, strange as many will deem the assertion, whether continuous education will produce beauty, whether the growth of intelligence will even in ages yield the physical result which we notice the authors of Utopias always assume, as if it were a scientifically demonstrable consequence of the new society. The most beautiful black race in Africa, a tribe in Nyassaland, on whose looks even missionaries grow eloquent, and who are really as perfect as bronze statues, are as ignorant as fishes, and, though they have discovered the use of fire, have never risen to the conception of clothes of any kind. The Otaheitan when discovered was as uncultured as the Papuan now is, yet the former approached as nearly to positive beauty as the latter does to positive deformity. The keenest race in Asia, and, as all who know them assert, the strongest in character, the Chinese, is decidedly the ugliest of semi-civilized mankind, while the Hindoo, if sufficiently fed is, even when as ignorant as an animal, almost invariably handsome. The Circassians, who know nothing and are rather stupid than exceptionally intelligent, are physically a faultless race, far more so than the Germans, who, though the best trained people in the world, display a marked commonness of feature, as if the great sculptor, nature, had used good clay but taken no trouble about the modeling. Some of the ablest among them belong to the flat-nosed, puffy cheeked, loose lipped variety.

STOMACH CRANKS.—The London Vegetarian Society reports a membership of 541, but the movement is said to have spread throughout England, Europe, and the colonies.

THE GERMAN MARINE.—Germany's merchant marine comprehends 3,594 vessels, with a registered tonnage of 1,320,721. Six years ago the figures were respectively 4,257 and 1,294,288. The number of sailing ships has fallen during this time from 3,607 to 2,779, and the number of steamships has increased from 650 to 815.

SENSIBLE SUGGESTION.—A German physician proposes that the manufacturers of preserved meats should be compelled to stamp their cans with a legible date mark. For a year or so, he says, canned meats may remain perfectly wholesome, but after that they deteriorate in a way defying alike precaution and explanation.

PENNY-SLOT PAPER.—The Compagnie Générale des Voitures, of Paris, are about to start a paper entitled *Paris Voiture,* which will be procured by putting a two-sou piece in a slot in every cab. The paper will contain the bills of the theatres, a few illustrations, and tips for the races. The purchaser will also be insured during his drive.

GAS AND BRICK.—Measurements made at some of the brick-yards in Findlay, Ohio, indicate that the amount of gas used to burn a thousand brick is 7,500 cubic feet, independent of the amount used for power in preparing the material. The rates have been as follows: For brick burned in open kilns twenty-five cents per thousand, and for brick burned in closed kilns twenty cents per thousand. At Fostoria the rate is fifteen cents per thousand. At Tiffin the rate has been fifty cents per thousand. The charge for seven drain-tile kilns at Tiffin is $50 per month. It is estimated that the consumption of gas in brick-making alone, at Tiffin, is not less than 1,000,000 feet per day during the busy season.

CHEMISTRY OF THE SUN.

MYSTERIOUS ABSENCE OF OXYGEN, NITROGEN, AND CHLORINE.

In connection with the photography of the solar spectrum, considerable advances have been made in the recognition of the chemical elements present in the sun. Copper, silver and vanadium have been transferred from the list of the doubtful metals there to the certain; and very recently Rowland has found clear evidence of the presence of silicon, the apparent absence of which has been long a standing puzzle. The evidence in favor of the presence of carbon also seems to gain strength, and the same is true in the cases of aluminum, cadmium and zinc. The fact that the lines which reveal the presence of silicon are almost entirely in the ultra-violet, invisible portions of the spectrum, warrants the expectation that photography may soon find there evidence of some of the other still missing elements, such as boron, phosphorus and sulphur. But no new light yet appears in reference to the mysterious absence from the sun of oxygen, nitrogen and chlorine, which play so important a part in the chemistry of the earth; except, indeed, that the results obtained by Janssen last summer, on the summit of Mont Blanc, are conclusive that the great "B" line of oxygen, which is so conspicuous in the solar spectrum when the sun is near the horizon, is entirely of earthly origin, and not in the least solar, writes Prof. Young of Princeton to the *Youth's Companion*. The veteran astronomer, still enthusiastic and full of pluck, though unable to endure any severe physical exertion, had himself carried by a small army of guides and porters to the very summit of the mountain, and there obtained decisive observations. As regards the "photosphere"—the luminous surface of the sun—and sun-spots, there is little news to note. Janssen at Meudon has made real improvement in the processes of photographing the spots and the details of the solar surface; and recent observations of the displacement of the lines of the spectrum at the eastern and western edges of the sun, made by Duner of Upsala, have confirmed the laws of the sun's swifter rotation at the equator—a law which, though first discovered more than thirty years ago, has recently been called in question. It still remains as much a mystery as ever how the great cavities which we see as spots come to be formed in the sun's surface, why they are so limited to the two zones on each side of the sun's equator, and why they show such a regular increase and decrease in numbers every eleven years.

POWER OF WATER.

WONDERFUL FORCE OF WATER USED IN HYDRAULIC MINING.

An editorial writer in the N. Y. *Sun* states that about six months ago there was a dinner party at Gen. Schofield's house in Washington. Among the guests were President Harrison, Chief Justice Fuller, the late Secretary Windom, Speaker Reed, Senator Sherman and Senator Stanford, and Mr. Justice Stephen J. Field. During the dinner the conversation turned upon mining operations in California, and Judge Field, whose knowledge of all matters relating to the Pacific coast is as extensive as his powers of narrative are entertaining, astonished the distinguished company by some of his assertions in regard to the force of the jets of water employed in hydraulic mining. He described the wonderful manner in which the streams from the hose cut to pieces and tear down the hills that hold the precious metal. Judge Field cited the Hon. James G. Fair as his authority for the statement that under a vertical pressure of one or two hundred feet the force of the stream is sometimes so great as to hurl away or hold boulders weighing a thousand pounds; and that it would be no more possible to cut through such a stream with a crowbar or an axe, where it issued from the nozzle, than to sever eight inches of solid iron with a penknife. As Judge Field afterwards informed Senator Fair, in a letter asking for expert testimony about the power of water applied by hydraulic machinery, these assertions were received by some of Gen. Schofield's guests with smiles of polite incredulity. The eminent jurist felt that his position, for the moment, was somewhat like that of the Englishman who informed the King of Siam that in England water often became so hard that people could walk on it. It is not at all surprising that the facts gravely alleged by Justice Field should stagger even an imagination like the Chief Justice's, or strain the faith of so profound a believer in dynamics as the Hon. Thomas B. Reed. In consequence of this incident, and for the vindication of his own reputation for veracity, Judge Field has collected from several of the highest authorities on practical hydraulics evidence and opinions that are of great interest. Ex-Senator Fair tells Justice Field that at the Spring Valley gold mine in Cherokee, California, the water used in the hydraulic mining operations was brought in pipes and ditches from a distance of nearly one hundred miles, and that the volume of water used on every working day in that mine amounted to three times the number of gallons consumed daily by the entire city of San Francisco. Mr. Louis Glass, for sixteen years the Superintendent of the Spring Valley mine, assures Justice Field that he has seen an eight-inch stream, under 311 feet of vertical pressure, move in a sluggish way a two-ton boulder at a distance of twenty feet from the nozzle; and that the same stream striking a rock of 500 pounds would throw it as a man would throw a twenty-pound weight. "No man that ever lived," adds Mr. Louis Glass, "could strike a bar through one of these streams within twenty feet of discharge; and a human being struck by such a stream would be killed—pounded into a shapeless mass." Mr. Augustus J. Bowie of San Francisco, the author of a standard book on hydraulic mining, estimates that the stream from a six-inch nozzle, under 450 feet vertical pressure, delivers a blow of 588,735 foot-pounds every second, equivalent to 1,070 horse-power. "It is absolutely impossible," says Mr. Bowie, "to cut such a stream with an axe, or to make an impression on it with any other implement." Mr. Bowie adds that although never to his knowledge has a man been struck by such a stream as it comes from the pipe, several accidents have occurred where miners were killed by very much smaller streams at distances of 150 or 200 feet from the nozzle. After an elaborate series of computations, Prof. Samuel B. Christy, of the University of California, an eminent authority on mining and metallurgy, reports to Justice Field that if a nozzle of from six to nine inches diameter were specially arranged to throw a stream vertically upward against a spherical boulder of quartz weighing 1,000 pounds, the vertical head being anywhere from 100 to 500 feet, the boulder would be forced up until the diminished velocity of the stream established an equilibrium of pressures. There would be a point at which the upward pressure of the stream would exactly balance the gravity pressure of the boulder, holding it, the half-ton rock, there suspended. In practice, of course, the boulder could not be balanced accurately upon the axis of the stream, but would fall to one side or the other. But if a large conical basket of iron bars were arranged about the nozzle, so as to catch the boulder whenever it should be deflected from the stream and return it to the nozzle, the 1,000 pounds of quartz would be kept in play like a ball in a fountain. As to cutting these streams, Prof. Christy says that he has often tried to drive a crowbar into one of them. The stream felt as solid as a bar of iron, and, although he could feel the point of the crowbar enter the water for perhaps half an inch, the bar was thrown forward with such force that it was almost impossible to retain it in the grasp. An axe swung by the most powerful man alive could not penetrate the stream; yet it might be cut by the finger of a child, if the child were seated on a railway train moving parallel with the stream in the same direction and with the same velocity. That velocity would be considerably more than a mile a minute. Justice Bradley of the Supreme Court has also tried his intellect upon the mathematics of the problem submitted by Judge Field. He delivers this opinion: "I can well believe all you say with regard to the tremenduous force of streams issuing from the pipes of the miners under a large head of water. Of course they would produce instant death if directed against a man standing near, and would probably cut his body in two." The statements here presented in summary will not astonish engineering experts or members of the New York Fire Department. The average citizen, however, is accustomed to regard water as the least destructive liquid that can be put in motion, and he is familiar with no stronger manifestation of its power than the velvety touch of the stream from the croton faucet. We should say that the distinguished Californian upon the bench of the Supreme Court had amply vindicated his right to be heard with respect and perfect confidence by any dinner party on the subject of hydraulic pressure. Does it occur to Gen. Schofield that in these facts there is the suggestion of a novel and most terrible engine of military defence against assaults at short range?

THAT OTHER FELLOW.

HOW MEN OUTGROW AND FORGET THEIR EARLIER SELVES.

The following passage from "The Listener's" column in a recent number of the Boston *Transcript*, will strike a responsive chord in the minds of probably all our readers who have reached that period of life when retrospection becomes at once curiously painful and irresistible: "It is a rather interesting thing to come upon a scrap of one's handwriting, buried between the pages of an old book, where it has lain for so many years that one is almost afraid of it, as if it were a kind of Doppelgänger, or duplicate of one's own self—or, if not so bad as that, an accuser of more years than one likes to be charged with. It is singular how one may change, in a dozen years or so, his manner of forming his letters, and yet write very much the same hand. Can it be possible that the person who made a capital T with that ornate twist on the left-hand side of the up-and-down part, and whose C was merely a downward stroke, but who made a very ornamental capital J—really the most difficult of all the letters in the alphabet to write—was the same person as the one who now pens these extremely commonplace characters, and yet that this present writer's hand should bear so strong a resemblance to this admirable original? One never feels so much like two people as he does at the moment of such a discovery. It is worth while, as one sits contemplating this old scrap of handwriting, to pretend that he is two people, like Alice in Wonderland, and to speculate as to what sort of a fellow that other one was that penned the old fragment. The more you think about it, the more you are convinced that that other fellow could not have been this one. All ordinary means of identification fail to prove him the same person. He did not know the people that you know now. He had never read half the books you think about now, nor seen the pictures that you so greatly admire, and he did not know the tunes that chiefly run in your head. He had never been to the places that have exercised a profound effect upon your imagination and your ideas. If you catechise him, you find that he entertained some queer notions, in that time long ago, that you utterly repudiate, and held in scorn certain other notions that have become as dear to you as the apple of your eye. He had not an inkling of the issue in some of the great literary and artistic problems that you wrangle about now. A queer fellow, all around, in so many respects foreign to you that you disown him on the spot, and

wonder how the deuce he came to counterfeit your handwriting so cleverly. And yet, if you try to shake him off, you cannot do it. These new thoughts that you are thinking now were thought by him in some shape then. This book that you swear by is only the echo of that other one which that fellow was very familiar with. This intensely modern concerto that rings in your ears, and for the moment seems to make all other music dull, had its prototype in something he knew; this beautiful picture existed before in another one. In short, this other fellow follows you up at every moment; when you run, he runs, and if he stops when you stop, it is only to start again the moment you put a foot forward. He had the same sense of being unhappy at that moment, and of always easily remembering the time when he was happy and didn't know it, that you have; and his photograph, if you happen to come upon it, with all its look of being another fellow, has that identical mole on the left cheek. It is a queer problem, with two conflicting solutions, each demonstrable!"

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

April.

MEAT.—Beef, lamb, mutton, ham, kidneys, liver, sausage, veal.

GAME AND POULTRY.—Brant, pigeon, chicken, duck, turkey, goose, snipe.

FISH.—Anchovy, bass, cod, snipe, eels, carp, catfish, flounders, halibut, herring, lobsters, mackerel, mussels, oysters, perch, rock-fish, salmon, smelt, white-fish, trout, sturgeon.

VEGETABLES.—Artichokes, beans, carrots, celery, garlic, lettuce, onions, parsley, parsnips, potatoes, shallots, spinach, turnips, watercress, radish, rhubarb, sea kale.

PRACTICAL RECIPES.

CURRIED FISH.—Fry a small chopped onion in two tablespoonfuls of butter, when partly done add two teaspoonfuls curry powder; cook for a few moments then add two good cupfuls of cold fish, freed from all skin and bones; stir well and cook for a few moments; season with salt and pepper. Serve on a hot dish with a border of boiled rice.

BROWN SOUP-STOCK.—Take four lbs. beef, which may be from the shin or any inferior part of the beef so that it be lean, cut it in pieces, and put it in the soup-pot with a good sized lump of butter and just enough water to prevent its burning, add to this a pound of lean bacon cut in slices; cover closely with a lid and cook gently until the gravy is extracted, then add three onions, a few whole cloves, some sweet herbs. Cover with boiling water and stew until the meat is very tender. This will form the foundation of many soups and gravies.

ONION SAUCE.—Peel some small onions and boil until they are quite tender, drain and chop them, add some melted butter, pepper, salt and a little milk, boil up once—thicken with a little flour if it seems too thin, and serve with roast mutton, veal or game.

CRAB CROQUETTES WITH PEAS.—To one pound of crab-meat (procured at Fulton Market, all ready for use, at forty cents per pound) add half a pint of soaked bread-crumbs, a teaspoonful of chopped parsley, two saltspoonfuls of salt, a heaping tablespoonful of butter, the yolks of two eggs, and a dash of cayenne. Mould together, and if too dry add a little water; then put it in the ice-box until wanted. Before the meal roll into cork shapes, dip in heated egg and crumbs, and fry in smoking hot fat. Let stand on a thick towel to drain a moment; put them on a dish, surrounded by a border of French peas, and serve.

CHEESE FRITTERS.—Make a batter of two tablespoonfuls of flour, the yoke of one egg and enough milk to make it the right consistency. Add two large tablespoonfuls of Parmesan cheese, pepper and salt to taste, and the whipped white of an egg, also a dash of cayenne. Mix well and drop by spoonfuls into boiling lard and fry a golden brown; drain, and serve immediately.

SHREWSBURY CAKE.—Beat to a cream one pound powdered sugar and one pound of butter. Beat very light, without separating the yolks from the whites, four eggs, add to them one-fourth teaspoonful nutmeg, a little mace, and one teaspoonful cinnamon. Add to the butter and sugar and beat thoroughly. Flavor with the juice and grated rind of a lemon and orange. Beat well, add gradually one and one-half lbs. flour, roll out, cut into little cakes, and bake on buttered pans in a quick oven.

HOREHOUND CANDY.—Boil one-half ounce of dried horehound in one pint of water for twenty minutes, strain through a fine sieve, and add one and one-half pounds sugar and one-fourth teaspoonful cream of tartar. Boil without stirring until it cracks in cold water; pour out in very thin sheets on buttered tins and mark off into little squares.

EATING AND LIVING.

OVER-FEEDING STARVES THE BRAIN.

A correspondent of the London *Truth* says: the persons living to a green old age who have come within the range of my observation were abstemious themselves, and had either sprung from poor families or came from the South, where heavy meat meals are not enjoyable. Guizot, who was not a vigorous trencherman, started in poverty, and was a Southerner. Thiers started in the same condition, ate twice a day and very heartily, but was so heavy after eating as to be obliged to go to sleep. He died of apoplexy after eating. I attribute the extraordinary difference in quality in the early and late works of Victor Hugo to his having only scant meals when he wrote the former, and to his having plentiful and delicious ones, to which he did the fullest justice, when he turned out the latter. Victor Hugo was *spirituel* before lunch or dinner; he was inflated in speech and bereft of all sense of the ridiculous when digesting either repast. M. de Lesseps is almost Oriental in his abstemiousness at table, he being of a Southern family, and having lived long in hot countries, which are as healthy as any to those who adapt themselves to the climate. I dare say he owes his longevity and high spirits to his sobriety in food as well as in drink. Volumes have been written against drunkenness. But any doctor who understands well the human frame will tell you (if he can cast aside humbug) that drink is not as bad in its effects as gormanizing. Nothing so hastens senility as the latter. Barthelémy Saint-Hilaire, though eighty-four, works as hard and with as little fatigue as he ever did in his life. Twenty years ago he said to me: "I am persuaded that the civilized man eats three times more than what he needs when he is not checked by poverty. For my part I was too poor until I was elderly to be a gourmand, and when I now go to dine at a friend's house I only play with my knife and fork. Dinner is a mistake." The Czar, his brothers, and his uncles are all gormandizers, and what a heavy, wearied lot they all look, unwieldy as megatheriums, and about as intelligent. I have never doubted, since I began to think upon the subject, that George III. ate himself into the mad doctor's hands, and Louis XVI. into semi-imbecility. Who were the great victors of the eighteenth century? Voltaire, who lived on coffee, and had too weak a stomach to bear much food; Washington, who was spare and abstemious; and at the Revolution, the people of Paris, who were starvelings. Stanley greatly explains his success when he says that all he wants is a crust of bread, a mouthful of meat when he can get it, and a cup of tea. The Scotch were a proverbially hungry people when they turned India into a British dependency. I have been discussing the dinner question with a Jew, aged eighty, who is an enthusiastic Mosaist. He himself ate the *vache enragee* until he was five-and-twenty, and thinks it was the making of him. The reason he gave why his brethren bear so well all climates is that they spoil their meat when they prepare it according to the prescriptions of their religion. It is first bled, and then steeped in salt and water until no redness stains the water. This unfits it for the spit or the grill, and does not make it toothsome in a stew—the only way in which it can be done, unless boiled. Meat thus prepared has no savor, and does not tempt the Jew to eat of it gluttonously. Dying of apoplexy does not much matter, since every one must die of something. But, as my aged Hebrew friend observes, it does matter to be for years in a state that ends in apoplexy—to wit, with a starved brain. The brain starves in the midst of too great plenty, because gormandizing clogs the capillary arteries which bring life to the brain substance. The blood does its best to do its work, and in its efforts at last bursts a vessel. I once knew an impressario who was also a Jew. He was behind any number of lyrical theatres, from Stockholm to Sydney, cafes-concerts, music halls, and other places where singing was the attraction. He held carnivorous feeding in horror, and told me that he never lost his time seeking for fine voices in countries where a fish or a meat diet prevailed. The most fish-eating Italians—those of Naples and Genoa—have often among them sweet singers. The most meat-eating part of Great Britain—England—is also a voiceless country. Though the singing is so fearful in the Scotch kirks, my friend found some divine songsters south of the Grampians, and a greater number in the Highlands. He often heard common Irish women "lilt" and sing like nightingales, but never in the towns. Sweden was a country of song, because a country of grain. Norway was not. Too much fish was eaten there. Vocal capacity disappeared in musical families who got rich. They ate too much meat. The vocal birds are eaters of grain, fruit, and vegetables. No carnivorous one could ever sing a song. It croaks, has a bad liver, and is generally melancholy.

ANCIENT VERTEBRATES.

THE OLDEST REMAINS YET DISCOVERED IN THE WORLD.

It ought to be of interest to every person in the United States to learn that within the last few days the Smithsonian Institution has discovered near Trenton, N. J., remains of animals with backbones more ancient by hundreds of thousands of years than have ever been found in any other part of the world, as a *Star* reporter is informed. Up to the present time the palæontologists of Great Britain have been crowing over those of America on the strength of the superior antiquity of their vertebrates. Experts in the science of the distant past on this side of the water have reluctantly yielded the palm in this respect to Europe. But now the situation is reversed and there is evidence to offer that vertebrate creatures existed in this very neighborhood ages before they have been proved to have lived on the other side of the world. Some notion of the antiquity of these remains may be had from the fact that the backbones, ribs, and other animal relics of which they are composed once formed portions of the anatomy of creatures that lived and swam in the earlier part of the epoch when the coal was deposited in the beds where it is now found and mined.

These fragments went to make up sharks that navigated the seas of millions of years ago, or sheathed the bodies of strange fishes that were clad in armor plate, as turtles are to-day. Now they are dug out from a stratum that lies beneath thirty-five miles of sedimentary stuff deposited by water. Volcanic action has turned a section of the earth's crust over upon its side near Trenton, so that what was in times past at a great depth is now exposed on the surface to the hammer of the geologist. It is partly through studying such accidental formations that mankind has learned its own ancestry. What lends particular interest to these vertebrates of the early coal-forming epoch is the fact that they are the ancestors of mankind. It is from them that we are all descended, science says, though, of course, they were not our earliest progenitors. Going back of and beyond them we find our more remote grandparents in marine worms. This seems unpleasant, but it is a demonstrated fact. Originally animate creation divided itself into two branches—the animal and the vegetable. The plants developed away from mental organization, assuming the condition of stationary parasites upon the earth. On the other hand the animals cultivated powers of locomotion, so that they were able by moving about to control their own environment. The vegetables performed the labor of gathering from the mineral kingdom food for the animals, so that the latter were enabled to devote all their energies to the cultivation of their powers and the improvement of their species. In this way it has come about that animals have steadily advanced since the time of the beginning of things, until man has been produced. From the worms of the seas came the original vertebrates, which resembled worms in appearance, but had backbones. Out of these creatures came the lampreys, and from them the sharks and other fishes. Fishes, you see, swam in the ocean for ages before any land animals existed. From them were developed the great salamanders of the later coal-forming period, which were the forefathers of the gigantic reptiles that ran creation during the mesozoic epoch, after the mighty upheaval that lifted the Allegheny Mountains out of the water. That was the age of reptiles. Some of them walked on the land, while others swam in the sea, and others still flew in the air. There were land species of which individuals were seventy feet in length, and they and others of herbivorous habits were preyed upon by carnivorous reptiles nearly as big—formidable lizard-like beasts with huge teeth and tremendous jumping powers. The first mammals that existed in the world were derived by descent from these giant reptiles, some of which, closely connected by family relationship with the line that produced man, had enormous fins on their backs, or tall spines like masts, bearing yard-arms like those of a man-of-war, though for what purpose is unknown. These earliest mammals were nearly related to the Australian hedgehog and to that extraordinary beast, the duck-billed platypus, which, though a mammal, resembles both reptile and bird and actually lays eggs. From them came the marsupials of the opossum type, which produced in the course of time the creodonts—eaters of flesh and insects—that were in form somewhere between opossums and dogs. They have all disappeared, though some rather remote relatives of theirs are found at this day in Africa and Madagascar, adorned with long scientific names. The creodonts evolved the raccoon-like lemurs, one genus of which had teeth like those of great apes and men. In fact, one species of this lemur genus, though no larger than a squirrel, had a brain bigger, relatively to its size, than that of any other animal. It, as science has demonstrated beyond the possibility of a doubt, was the ancestor of the anthropoid apes, which were in turn the ancestors of man. The most manlike of the anthropoid apes now surviving is the chimpanzee, but the actual progenitor of humankind was another species, at present extinct, which has not as yet been identified with certainty. Here there is a gap in the human genealogy, which science is partly able to close by going backward from the other end. Though the typical manlike ape is wanting, the remains of ape-like men—a whole race of them—have been found at Cannstadt, near Stuttgardt, at Neanderthal, near Wiesbaden, and at Liege, in Belgium. These people had skulls of inferior development, massive jaws, no chins worth mentioning, and probably walked with their legs bent. The long-sought missing link was between this ape-like man and the anthropoid ape. He will be found some day; science is entirely confident of that. The only reason why he has not been discovered already is that he is too modern. Such of his remains as have been preserved are at present under water. Some day, by the recession of the water, the beds containing them will be uncovered, and they will be dug out. That is the way all animal remains are secured. The animals which find a burial on land inevitably disappear, their bones crumbling and turning to dust. But those which find a watery grave by being swept into the lakes or carried away by the rivers are apt to be covered over with the mud of the bottoms and so kept intact as to their skeletons for ages. Of the creatures which represented the missing link many must have perished in floods, been drowned by falling into the water, or have died, their bodies being subsequently floated away. In a time that is sure to come centuries hence their jawbones and other parts will turn up and the genealogy of man will be rendered complete. In this manner it has been ascertained how by evolution the creature man, as he is to-day, was produced. The question now is, What is he progressing toward, and what will become of him? If his past is interesting, surely his future ought to be an hundred-fold more so. Already it is manifest that, physically speaking, man has been going backward for some time past. His bodily faculties have been steadily diminishing in quality and power. Living under conditions essentially artificial, his senses have lost their original acuteness. The keen scent he used to possess has become so far rudimentary that scarce anything is left of it. His sight has grown so poor that it is the very exceptional individual who possesses what is called "normal" vision, and a large percentage of young people require spectacles. Good hearing is so commonly lacking in civilized human beings that one meets deaf people in every drawing-room, and deaf and dumb unfortunates are being propagated to such an extent by marriage as to give promise of creating a silent race apart from mankind at large. The average health and physical condition of man and woman are less good than hitherto. Just as lenses have been adopted for improving the eyesight, and fans constructed for holding between the teeth to hear with, so electro-magnetic apparatus may be devised to supply lost delicacy to the sense of touch, and various other artifices may be employed to lend acuteness to dulled perceptions of all sorts. Whether this comes about or not, it is reasonably sure that the man of the future will be developed rather in the direction of mind than of matter. Gathering the forces of nature more and more under his control he will have less need of bodily strength. Eventually he ought to evolve himself into a being of pure intellect, incommoded slightly, if at all, by a fleshly environment. In short, as Dr. Elliott Coues puts it, he may become eventually a highly organized ghost, with privileges of unrestricted locomotion through space—resembling, in short, one of those apostles of contemporary Boston Buddhism, who are able to project their spiritual entities to the utmost confines of the infinite, and view with incorporeal eye the awful mechanism of the universe.—*Washington Star.*

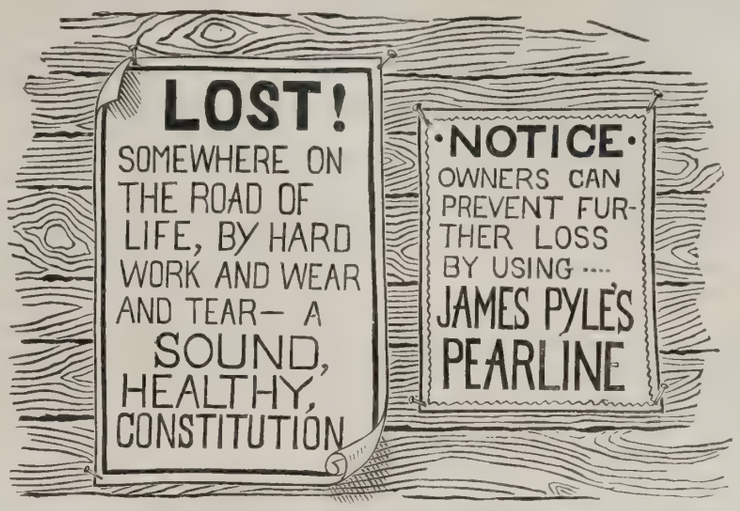
HEAT WASTED.—The most recent observations as to the amount of heat the earth receives from the sun show that in clear, pleasant weather 63½ per cent. of heat is absorbed by the atmosphere and only 36½ per cent. reaches the soil. This figure rises in October to 41 per cent. and sinks to 28 per cent. in January.

CRYSTALLINE GLASS.

DETAILS OF AN INTERESTING MANUFACTURE.

Few trade secrets have been kept so well from the knowledge of the general public as the process of producing the above-mentioned species of decorative glass. It is said to be the invention of a French engineer, who called it "vierre gievre," or frozen glass. In the United States, where its manufacture has been brought to a much greater state of perfection than in any other country, it is known under the more common names of chipped or crystalline glass, and the operation of manufacture "glass chipping." It has a remarkable appearance, being covered with fern-like figures, no two of which exactly resemble each other, differing in both shape and form. To those unacquainted with the method of producing this glass—and there are very few that have any conception of how it is made—the process of manufacturing is very puzzling. This method of ornamenting glass is so simple that most people, when they have it first explained to them, will hardly believe that such simple means can produce such marvellous results. It is done by covering glass with glue, which adheres to the glass, and when the glue dries it shrinks and draws with it pieces of the glass or chips of glass. The first necessity in carrying out this process is to have the glass which is to be ornamented ground either by means of the sand blast or by the more troublesome means of grinding by hand. This is done by rubbing a stone with a flat side over the glass till it has lost its polish and becomes translucent. A thin layer of emery kept wet with water will facilitate the grinding, which should be as coarse as possible, and for which reason grinding done by the sand blast is preferable. After the glass has been ground it should be kept scrupulously clean. Great care should be exercised that the surface is not touched by the hands. Any trace of grease is very apt to make the results uncertain. If the glass has, however, become contaminated, it may be cleaned with very strong ammonia, although glass which it has been necessary to clean is apt to be rather unreliable. When everything is ready the glass it placed in a room where it is intended to carry on the process, accurately levelled, and flowed with a solution made as follows: Good glue is placed in sufficient water to cover it and allowed to soak for twenty-four hours. If the water is absorbed during the soaking, more may be added. It is then liquefied over a water bath and is then ready to use. In practice it makes considerable difference which kind of glue is used. By repeated experiments it has been found that Irish glue is the best for the purpose. A wide brush is dipped in the glue and applied to the glass. The coating should be a thick one, otherwise it will not be strong enough to do the work required. When the plates are coated they may be placed in racks, and the temperature of the room raised to 95 or 100 degrees F. They are permitted to remain at this temperature till they are perfectly dry, which will be in from ten to twenty hours. It is at this stage that the uncertain character of glue shows itself. Under certain circumstances the glue will begin to crack and rise of itself without any more manipulations, but most generally it will require to have a stream of cold air suddenly strike it. If the plate is perfectly dry at this period, and of sufficient thickness, the top surface of the glass will be torn off with a noise resembling the crack of a toy pistol. Sometimes the pieces of glue will leap two or three inches into the air, and may even fly into the eyes and injure them. To guard against this it is customary for the workmen to wear a pair of spectacles fitted with plain glass. The glue will come off sometimes at the least expected times, notably if the plate with dried glue is being carried from one room to another. Plates which have shown a decided disinclination to chip have manifested a remarkable and unexpected activity, and have jumped into the face of the person carrying them in such a manner as to cause him to drop them. The

strength of the glue is something very extraordinary. If the glass has been coated on the hollow or belly side of the glass, the slight leverage thus obtained is almost sure to break it, especially if the glass be single strength. Even plate glass is not unfrequently broken. It might be a rather interesting mathematical calculation to find out the force necessary to separate the surface of glass in this manner on a piece say 48 by 48 inches. The result of the operation described may be various. It may be either a design resembling ferns of various shapes and sizes, or it may be a circular design, exhibiting narrow, feathery appearences; or, if unsuitable glue has been used, it may be of a nondescript appearance. If, after the glue has been applied, but before it has become any more than set, a piece of stout paper is pressed over it, and it is allowed to dry in this way, the glass will have less the appearance of feathers, but will be much coarser and larger pieces will be removed. The circular design mentioned occurs under the same circumstances as the other, with the exception that it generally is made during cold weather. Sometimes several weeks may run along and nothing but this formation be made. Some very elegant designs may be produced by submitting the glass once more to the same operation, covering it as before and allowing the glue to chip. This is known by the name of double chip. If the glass was covered with the small circles in the first place, the second time it will have an appearance very much resembling shells, and for this reason, this has been called shell chip. If, instead of using ordinary glass, colored glass is employed, pretty and original effects may be obtained. The glass may be either colored clear through or it may have only a thin coating on one side. In the latter case in some places the entire layer of colored glass will be removed, and in other places only a very little, and will therefore give all the gradations between those two extremes. Glass which has been treated in this way may be silvered and gilded and thereby be made still more remarkable in appearance. Extremely elegant effects may be obtained by what is known as "chipping to a line." The design is ground in the glass by the ordinary sand blast process. After the glass has passed through the machine, the protective coating (wax is generally used) is not removed, but is left on to keep the glue off those parts which are not intended to chip. The glue is then applied in a thick layer to the ground portion and the process is carried on as usual.—*Scientific American.*



Send it back Peddlers and some unscrupulous grocers will tell you, "this is as good as" or "the same as Pearline." IT'S FALSE—Pearline is never peddled, and if your grocer sends you something in place of Pearline, do the honest thing—*send it back.* 197 JAMES PYLE, New York.

CLEVELAND'S SUPERIOR Baking Powder.

The Official Reports of the
United States Government, 1889,
Canadian Government, 1889,
New Jersey Commission, 1889,
Ohio Food Commission. 1887.
prove that Cleveland's is
THE STRONGEST
of all the pure* cream of tartar baking powders.
*Ammonia or alum powders, whatever their strength, should be avoided as injurious.

25 CTS. PISO'S CURE FOR CURES WHERE ALL ELSE FAILS. Best Cough Syrup. Tastes good. Use in time. Sold by druggists. CONSUMPTION 25 CTS.

Fine Table Wines
From our Celebrated Orleans Vineyard.
Arpad Haraszthy & Co.
Producers of the
ECLIPSE
CHAMPAGNE,
530 Washington St.
SAN FRANCISCO.
GENERAL AGENCIES:
NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOSEPH R. PEEBLES' SONS CO., 73 West Fourth Street.
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.

BUSINESS NOTES.

BUSY PACKERS.

This is the busy season with Gordon & Dilworth. Up early in the morning to get the pick of the choice fruits; everything rushing about the factory; teams hauling in fruit; sorters picking it over and washing the berries, cooking, canning, labelling, boxing and shipping. Every one around the office equally busy; open till late in the night. It is a sight that not only gladdens a business man's heart, but every housewife would be delighted to see the wonderful care and cleanliness of hands and vessels. In fact, this factory is a model one, and accounts in a measure for the great success of the Gordon & Dilworth brand.

ANTIDOTE FOR THE GRIP.

W. R. Warner & Co. are evidently determined to keep in the van of therapeutic remedies. "Antalgic Saline" appeals to us to-day for recognition as a remedy for the relief of "headache," also for influenza and neuralgia, and as an antidote of "la grippe" they issue the "Pil. Chalybeate Compound:"

Composition carb. protoxide of iron, grs., 2½.
Ext. nuc. vom., - - - gr., ⅛.

Sig.: One pill every four hours and increase to two pills three times a day. Antalgic Saline, one dessertspoonful every four or five hours till relieved for headache. The same mode of administration precedes that of the chalybeate pills for "la grippe."

HORSFORD'S ACID PHOSPHATE.

The best tonic known; furnishing sustenance to both brain and body. Dr. O. Worthy, Lancaster, N. H., says: "I have used it in requiring brain and nerve food as a result of overwork attended with exhaustion and loss of strength, with impaired digestion, with good results.

HIGH PLACES.—The highest place in the world regularly inhabited is stated to be the Buddhist monastery Halne, in Thibet, which is about 16,000 feet above sea level. The next highest is Galera, a railway station in Peru, which is located at a height of 15,635 feet. Near it, at the same level, a railway tunnel 3,847 feet in length is being driven through the mountains. The elevation of the city of Potosi, in Bolivia, is 13,330 feet; Cuzco, Peru, 11,380 feet; La Paz, Bolivia, 10,883 feet; and Leadville, Colo., 10,200 feet.

SICKNESS AND STARVATION.—There is a popular notion to the effect that a person is more likely to take a contagious disease when the stomach is empty. Although this fact seems to be well established by experience, nevertheless it has never been established as a scientific fact until recently. Experiments which have lately been made upon pigeons, by two Italian physicians, demonstrate beyond any reasonable doubt that hunger is favorable to the activity of the infectious element, whatever it may be. Pigeons that had been starved were found to be very susceptible to the contagion of anthrax, although, when well fed, they were not at all subject to this disease. It thus appears that hunger in some way lessens the ability of the body to defend itself from the attack of disease germs. Possibly this may be in part due to the fact that when a person is hungry there is no gastric juice in the stomach, so that the protecting influence of this digestive fluid is lost. Then, too, the lowering of the vital powers as the result of hunger, lessens the resistance of the cells of the body in general.

THE N. Y. HAY EXCHANGE BULLETIN.

OFFICIAL REPORT OF THE HAY AND STRAW MARKET AT NEW YORK.

COMMISSION SALESMEN.

NOTICE.

These names are arranged alphabetically.

WM. AFFLECK & CO.,
Commission Merchants in
HAY AND STRAW,
Office No. 5,
N. Y. Hay Exchange Building.

J. ALSDORF,
Commission Dealer in
HAY AND STRAW,
33d Street and 11th Ave.,
NEW YORK.

E. A. DECKER. F. W. TOMPKINS.
DECKER & TOMPKINS,
Commission Merchants in
HAY, STRAW, GRAIN,
Office: 16 New York Hay Exchange Building.

L. S. DILLENBACK. T. O. PECK.
DILLENBACK & PECK,
MAIN OFFICE:
Room 0, N. Y. HAY EXCHANGE, N. Y. City.
STOREHOUSE AND BRANCH OFFICE:
101, 103 and 105 North 5th St.,
and 152 and 154 Berry St.,
Palmer's Dock. Brooklyn, E. D.

EDWIN B. DUSENBERRY,
COMMISSION MERCHANT,
And Wholesale Dealer in
HAY, STRAW AND GRAIN.
No. 1, N. Y. Hay Exchange, New York.

THOS. FONDA & CO.,
Commission Merchants
And Dealers in Hay, Straw, Grain and Country Produce,
13 & 14 N. Y. Hay Exchange Building.

N. A. FULLER,
COMMISSION MERCHANT IN
HAY AND STRAW,
33d Street and 11th Ave.,
NEW YORK.

J. H. Hubbel. Oscar Kent.
HUBBEL & KENT,
HAY AND STRAW
COMMISSION MERCHANTS,
New York Hay Exchange Building.
Personal attention guaranteed all consignments.
Correspondence solicited.

THEO. P. HUFFMAN & CO.,
COMMISSION MERCHANTS
In Hay, Straw, Grain, Feed, &c.,
648 & 650 West 34th Street,
Bet. 11th & 12th Aves., N. Y.

The N. Y. Hay Exchange is located at 601 W. 33d St., corner 11th Avenue.

Only the cards of members of the N. Y. Hay Exchange appear on this page.

RULES FOR GRADING HAY AND STRAW

As Adopted by the N. Y. Hay Exchange.

CHOICE OR PRIME HAY—Shall be pure timothy, properly cured, bright, natural color, sound and well baled. No. 1—Shall be timothy, not more than one-eighth (⅛) mixed with "red top" properly cured, bright natural color, sound and well baled. No. 2—Shall be timothy, not more than one-quarter (¼) mixed with red top and blue grass, properly cured, good color, sound and well baled. No. 3—Shall include all timothy not good enough for No. 2, proportionately mixed with blue grass, red top, and clover, sound and well baled. SHIPPING—Shall include all hay not good enough for other grades, and may be natural meadow, free from wild or bog grass, and must not contain over one-third (⅓) clover, sound and well baled. CLOVER MIXED—Shall include all hay containing not over two-third (⅔) clover, and one-third (⅓) timothy, properly cured, sound, and well baled. CLOVER- Shall be medium grown, properly cured, good color, sound, and well baled. NO GRADE OR REJECTED HAY—Shall include all hay badly cured, musty, stained, or in any way unsound.

No. 1. RYE STRAW—Shall be clean, bright, long Rye, in bundles, sound, well and securely baled. No. 2—Shall be long Rye, in bundles, sound, well and securely baled. SHORT RYE—Shall be clean, not bundled, sound, well and securely baled. OAT STRAW—Shall be clean, bright, sound, well and securely baled.

In the New York market bale-wood is weighed in without tare. In all other markets it is deducted.

These quotations for choice, No. 1 and No. 2 hay are for large bales. 5c. per cwt. less when in perpetual press bales.

The New York quotations are per cwt. At other points, per ton.

NEW YORK, April 6, 1891.

The following are the market prices to-day at New York.

	Large Bales.	Small Bales.
Fancy Hay	60c @ 70	60 @
No. 1	55 @ 60	55 @
No. 2	50 @	
No. 3 and Shipping	45 @	
Clover Mixed	50 @ 55	
Clover	45 @	
Long Rye Straw	80 @ 85	
No. 2 "		
Oat Straw	35 @ 40	
Wheat Straw	35 @ 40	

Receipts week ending April 4, as follows:

Via N. Y. Central	186 cars.
" West Shore	135 "
Other roads by Lighter, 34th Street	85 "
Total	406 cars.

Since our last issue the market has been steady at prices then quoted. The stock on hand is not large, and we do not look for any change during this week.

H. B. Jenkins. F. S. Williams.
JENKINS & WILLIAMS.
COMMISSION MERCHANTS IN
HAY, STRAW AND GRAIN,
HAY EXCHANGE.

JOHN KERWIN & SON,
DIRECT RECEIVERS OF
HAY, GRAIN and GENERAL PRODUCE
DEPOT AND STOREHOUSES,
Palmer's Dock, Nos. 97 & 99 North Fifth Street,
BROOKLYN, N. Y.
SHIPPING ADDRESS, PALMER'S DOCK, BROOKLYN, N.Y
West Shore R. R., N. Y. C. & H. R. R. R., N. Y. L. E. & W. R. R., Pennsylvania R. R., D. L. & W. R. R., Lehigh Valley R. R., and connections.

W. J. OVEROCKER. PERRY HATCH.
OVEROCKER & HATCH,
Commission Merchants in
HAY, STRAW AND GRAIN,
33d Street & 11th Avenue, New York.
References: West Side Bank, New York City; Exchange Bank, Holly, N. Y.

Gilbert Plowman, NEW YORK. Spencer Billington, FORT HUNTER, N. Y.
PLOWMAN & BILLINGTON
COMMISSION MERCHANTS,
HAY, STRAW, GRAIN, &c.
No. 15 N. Y. Hay Exchange,
33d St. & 11th Ave., NEW YORK.

JAMES ROZELL & SON,
Commission Merchants and Wholesale Dealers in
HAY, STRAW, GRAIN AND COUNTRY PRODUCE.
N. Y. Hay Exchange, New York.

SKINNER, BLOOM & CO.,
Successors to Rogers, Skinner & Co.,
COMMISSION MERCHANTS
And Dealers in
Grain, Flour, Hay, Feed, Meal, &c.,
74 CORTLANDT STREET, - NEW YORK.
Barge GYPSIE, Foot Bridge St., Brooklyn.

H. SLINGERLAND,
Barges MERCHANT and HARVEST QUEEN
Foot of West 11th Street,
HAY AND STRAW.
Also, 33d and 35th Streets, and all Railroad terminals. Special facilities for lighterage free goods.

CHARLES F. SWAN,
Commission Merchant in
HAY, STRAW & GRAIN,
At all the Railroad Terminals
in New York, Brooklyn, Jersey City, &c.
MAIN OFFICE,
108 BROAD ST., NEW YORK.

TITUS, WELLS & WILLETS,
Commission Merchants and Dealers in
HAY AND STRAW,
133 Roosevelt St.,
NEW YORK.

G. E. Van Vorst. James M. Hillery.
VAN VORST & CO.,
COMMISSION MERCHANTS,
HAY, STRAW AND GRAIN
N. Y. Hay Exchange, 33d St., & 11th Ave.
562 & 564 West 34th St., NEW YORK.

NOTICE.

These names are arranged alphabetically.

HOSMER, CRAMPTON & HAMMOND,

NO. 43 COMMERCIAL STREET,

BOSTON.

COMMISSION MERCHANTS,

HAY, STRAW, FLOUR & GRAIN.

E. B. HOSMER, G. W. CRAMPTON, BENJAMIN HAMMOND, A. L. ROBINSON.

BOSTON HAY AND STRAW MARKET.

Hay, choice to fancy, in large bales	$13.00 to	$14.50
Hay, choice to fancy, perpetual pressed bales	12.50 to	13.00
Hay, fair to good	11.00 to	12.00
Hay, poor to ordinary	9.00 to	11.00
Hay, Clover and Clover mixed	9.00 to	11.00
Hay, swale	8.00 to	8.50
Straw, Rye, good to prime	17.00 to	17.50
Straw, Oat	8.00 to	

BOSTON, April 4th, 1891.

Receipts for the week are 209 cars of Hay and 13 cars of Straw; corresponding week last year, 242 cars of Hay and 5 cars of Straw. There is no special change to note in the condition of the market from what it was a week ago. Receipts have been liberal and fully equal to the demands. The accumulated stocks have not been at all reduced during the past two weeks. We quote the market quiet at quotations.



H. F. WILSON,
WIRE BALE TIES,
458 WEST 38th STREET, New York.

HAMMOND'S
CELEBRATED
Calumet Oleomargarine

Strictly pure, cheap and healthful.
Ask your grocer for it.
Put up in packages of all sizes, also prints and rolls.

C. H. HAMMOND CO.,
607 to 615 THE ROOKERY,
CHICAGO.

Also offices at Boston, South Omaha, Neb., and Hammond, Ind.

We can save you Fifty Dollars when you Build. Send

A complete set of Plans to build from, simply state about price of dwelling desired. 25 cts. in stamps. Our book "Beautiful Homes." 25 cts. Our monthly book "The National Builder," 25 cts. Address
The National Builder, Adams Exp. Bldg., Chicago, Ill.

SWIFT'S
CHOICE
Chicago Dressed Beef
AND
MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,
UNION STOCK YARDS,
CHICAGO, ILLS.

PUBLICATIONS OF THE
ANALYST PUBLISHING CO.

THE AMERICAN ANALYST.
Weekly. Every Thursday. $1 per year.

THE ROOFER, TINNER AND SHEET-IRON WORKER.
Monthly. 15th each month, $1 per year.

THE LEATHER MANUFACTURER.
Monthly. 1st each month. $3 per year.

Reliable agents and representatives wanted everywhere on liberal terms. Address

ANALYST PUBLISHING CO.
19 PARK PLACE, NEW YORK.

NATURAL MINERAL PURGATIVE WATER.
From the Springs of
VILLACABRAS.
Prescribed by the Highest Medical Authorities.
Stronger effects than any other under smaller volume. No smell—no repulsive taste—no after-constipation—no gripes. As a daily laxative it can be taken either pure or mixed with milk, tea or broth.
Sold by all Good Druggists.

HARTSHORN'S SELF-ACTING SHADE ROLLERS

NOTICE SCRIPT NAME OF Stewart Hartshorn ON LABEL, AND GET THE GENUINE HARTSHORN



A HIGH-GRADE PIANO

AT A VERY MODERATE PRICE.

NEW DESIGNS. FANCY WOODS.

Terms Easy. ✣ Monthly Instalments.

TWO, THREE AND FOUR PEDALS.

Catalogues, Prices, Terms, Etc., sent to any address.

EVERY PIANO WARRANTED 5 YEARS.

(Mention this Paper.)

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,

HOWARD STREET, BOSTON, MASS.

GOLD MEDAL, PARIS, 1878.



W. BAKER & Co.'s Breakfast Cocoa

from which the excess of oil has been removed,

Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

"BILLET"

are

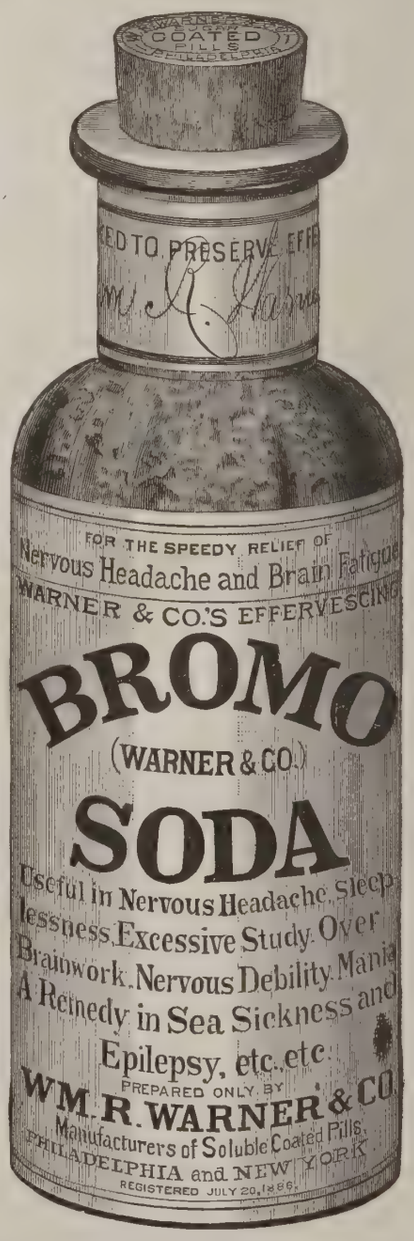
Carefully Selected French Sardines, Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS

BROMO SODA.

Useful in Nervous Headache, Sleeplessness, Excessive Study, Over Brainwork, Nervous Debility, Mania, Etc.

DOSE—A heaping teaspoonful in half a glass of water, to be repeated once after an interval of thirty minutes, if necessary. Each teaspoonful contains 30 grs. BROMIDE SODIUM and 1 gr. CAFFEIN,



SUPPLIED BY ALL DRUGGISTS

Ask for (Bromo-Soda, Warner & Co.) and take no other "Bromo."

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

THE ORIGINAL AND GENUINE
(WORCESTERSHIRE SAUCE).



LEA & PERRINS' SAUCE

In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—

Lea & Perrins

Beware of Imitations; see that you get Lea & Perrins'

For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS. NEW YORK.

RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,
184 Greenwich St., N. Y.

BLAIR'S PILLS.



Great English Remedy for GOUT, RHEUMATISM and KIDNEY COMPLAINTS.
SURE, PROMPT and EFFECTIVE.
Large Box, 34; Small, 14 Pills.
At all Druggists, and
224 WILLIAM STREET, NEW YORK.



C-U-R-E-S
DIARRHŒA, DYSENTERY,
MALARIA,
all ailments of the bowels. Is an anti-dyspeptic, and a **DELICIOUS INVIGORATIVE.** Leading Physicians prescribe it for **ADULTS AND CHILDREN.** *FOR SALE* by Druggists and dealers.
RHEINSTROM BROS., DISTILLERS OF FINE LIQUEURS,
54, 56, 58, 60, 62 E. 3rd STREET, CINCINNATI, O.

ESTABLISHED IN LONDON, 1831.
DEAN'S PATENT
Ardenter Mustard



W. G. DEAN & SON,
361 & 363 WASHINGTON STREET; 84, 86, & 88
NORTH MOORE STREET, N.Y.

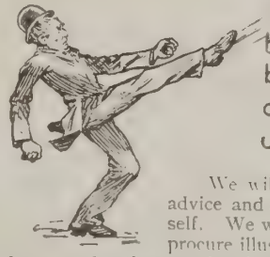
We shall be glad to supply our readers with any periodical published at club rates.

Send us a postal naming periodical and we will quote you prices.

ANALYST PUBLISHING CO.,
19 Park Place,
New York.

Pure LAGER BEER,
"IMPERIAL" and "CULMBACHER"
Brewed & Bottled SPECIALLY FOR HOTELS, CLUBS AND PRIVATE FAMILIES
BY
Beadleston & Woerz
291 W. 10th St. New York.
Orders by Postal Card promptly attended to.

Don't kick



because your business is bad, but advertise If you don't know how to, write to us and we will tell you.

We will prepare your advertisement or give you advice and assistance to aid you in preparing it yourself. We will have the advertisement set in type and procure illustrations if any are needed. When a satisfactory advertisement has been produced we will furnish proofs and an electrotyped pattern to be used in duplicating the advertisement if the display or illustration make an electrotype desirable.

Address GEO. P. ROWELL & CO.,
Newspaper Advertising Bureau,
10 Spruce St., N. Y.

INSTRUCTIONS TO SUBSCRIBERS.

The **Names of all Subscribers** are registered as soon as received, and paper is always promptly forwarded.

Postage.—The postage to all parts of the United States and Canada is paid by the publisher.

Remittances of small sums may be made with comparative safety in ordinary letters. Sums of one dollar or more must be sent by registered letter or P. O. money order, otherwise we cannot be responsible for same. Silver must not be sent in a letter.

Postage Stamps will be received for the fractional part of a dollar, and in any amount when it is impossible for patrons to procure bills, but you must send one or two-cent stamps only.

SUBSCRIPTIONS.—The AMERICAN ANALYST will be sent one year to any subscriber for ONE DOLLAR. New subscriptions can begin at any time.

We Stop the Paper at the expiration of the time paid for unless a renewal of subscription is received. Those whose subscriptions have expired must not expect to continue to receive the paper unless they send the money to pay for it.

Change of Address.—Subscribers wishing their addresses changed must invariably give their former as well as new address.

Missing Numbers.—It occasionally happens that numbers of our paper sent to subscribers are lost or stolen in the mails. In case you do not receive any number when due, write us a postal card and we will cheerfully forward a duplicate of the missing number.

Most Important of All.—In every letter that you write us, never fail to give your full address, plainly written—name, post-office, County and State.

Address all letters to

THE ANALYST PUBLISHING CO.,
19 Park Place, New York.

THE GREAT AMERICAN TEA COMPANY

LADIES GET UP ORDERS.
Entire New Departure.
A HANDSOME PRESENT TO EVERY SUBSCRIBER.
THE GREATEST INDUCEMENTS EVER KNOWN TO INTRODUCE OUR NEW GOODS.

If you enjoy a cup of **Delicious Tea** send in your orders. 3½ Lbs. Fine Tea by mail on receipt of $2 and this "ad". Beautiful premiums given away with $5 orders and upwards. The **most extraordinary bargains** ever offered, during the next thirty days. China Tea Sets and Lamps with $10, $15 and $20 orders to introduce our excellent **New Crop Teas.** Formosa and Amoy, Oolong, Congou, English Breakfast, Japan, Imperial, Young Hyson, Gunpowder, Sun Sun Chop and Mixed. Good mixed teas 20c. per lb. Headquarters in United States for Fine Teas. One pound of our tea will go farther than three pounds of trash. Thirty years' national reputation for selling **Pure Goods Only.**

THE GREAT AMERICAN TEA COMPANY,
P. O. BOX 289. 31 and 33 Vesey Street, New York.

Tabasco Pepper Sauce
OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced, by connoisseurs, to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY,
NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

SUBSCRIBE
FOR THE
AMERICAN
ANALYST.
$1.00 Per Year.

GLENN'S SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,
C. N. CRITTENTON,
115 FULTON STREET,
NEW YORK.



THE CENTURY DICTIONARY comes nearer to being a complete catalogue of the English language than any dictionary ever published. But it is not merely a dictionary: it is an encyclopedia of common things as well. It has been ten years in preparation. The leading scholars of the country have contributed to its pages. It is the latest dictionary and it ought to be, and is, the best.

A large descriptive pamphlet containing full-size sample pages, etc., will be mailed to any one sending five 2-cent stamps to
THE CENTURY CO., 33 East 17th St, New York.

Be progressive and keep abreast of the times. Avoid dyspepsia by using **Lard Compound** and **Cottolene,** a substitute for lard.

The highest medical authorities pronounce them healthful; and expert cooks commend them.

Our **Clairette** brand of cotton oil soap is the purest and best laundry soap in the market; as pleasant to the hands as genuine castile.

N. K. FAIRBANK & CO.,
CHICAGO AND ST. LOUIS.

A BUSINESS BENEFIT.

ADVANTAGES TO ADVERTISERS OFFERED BY THE "AMERICAN ANALYST."

It has not the limitations of a daily paper. No one reads yesterday's paper. A monthly lives at least a month, while a weekly is fresh four times a month, and its audience is not limited by geographical lines, but the circulation is all over the United States and Canada.

It contains matters of interest to everyone, especially the ladies of the household, and is, therefore, sure of a careful perusal. Our audiences are intelligent and of the better classes, who have money to spend, and any well worded advertisement in our columns, giving real information, will receive a careful perusal.

Our rates are as low as our circulation affords. Large circulation and original matter cost money, and those advertisers who desire to realize these benefits must expect to pay reasonably for them.

Advertisements in our columns are permanent. Most of our subscribers bind their numbers.

Our advertisements are set up in an attractive form, sure to call the attention of the reader.

Anything that our readers want, or for which a demand is to be created, not wholly of a local nature, will pay to advertise with us.

We take only advertisements from legitimate houses of really meritorious goods, and give them all the editorial assistance they deserve; consequently our readers knowing this, have confidence in advertisements contained in our columns.

The fact that we have the best and largest houses in every branch of trade advertising with us, and that they always renew as their seasons arrive, proves beyond a doubt that they have found the AMERICAN ANALYST a good advertising medium. Why should not you?

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 16. NEW YORK, THURSDAY, APRIL 16, 1891. WHOLE No. 216

APR 20 1891 ILLINOIS

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - $1 per year.
Single Copies, - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.

Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.

Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,

H. LASSING, M. D., } *Editors.*
T. P. McELRATH, }

No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

Animal Economy 184
Art in Nature 182
Bellamy's Vision 184
Domestic Dietetics 185
Editorials 181
That "Food and Health" Circus; Storm Extractors; Volt and Ampere.
Electrical Heating 183
Hay Market Official Bulletin 188
Superstitions 182
Woman's World 186
Women's Clubs 185

THAT "FOOD AND HEALTH" CIRCUS.

The AMERICAN ANALYST is not the only journal making the discussion of food products a specialty that has felt constrained to denounce the false pretentions under which the recent Retail Grocers' Fair in this city was conducted. The management, intent solely upon capturing the unwary shekel, made a great demonstration beforehand in announcing the affair as a Pure Food Exhibition. But after the aforesaid shekel had been captured the visitor was forced to content himself with viewing a combined imitation of the side-shows of a country circus, and the cereal department of an American Institute Fair, lacking, however, several of the most creditable genuine exhibits that contribute to impress the latter upon the good will of the public. Our enterprising contemporary, the *National Standard*, says of the pure food humbug-feature of the exhibition that, "the managers of this class of shows make the Food Question serve their purpose—which seems to be their first consideration—of making money. It is not dealing fairly with the manufacturers of food products, most of whom were solely influenced to take part in the exposition upon the reasonable supposition that it was to be a "Food and Health" Exposition, and not a "Retail Grocers' Fair." Not only the manufacturer has cause for complaint, nor is he the only sufferer—it is the general public, that vast army of consumers, who are imposed upon in this matter. This great question of purity and wholesomeness of food affects every class of people. There is but the one food movement—but the one principle—and that is pure and wholesome food for the benefit of the human race. This is the first and only consideration; no money-making scheme should be tacked on to it in the interest of a few. A Food and Health Exposition can never be a real and lasting success when such an affair is made subservient to a building fund. Much as an association hall or exchange for the retail grocers of New York City is to be desired—and certainly every well-meaning person wishes these gentlemen well in their commendable enterprise—the grocers had by far better bide their time, or better still, inaugurate a series of Retail Grocers' Expositions, to be devoted to anything and everything pertaining to the grocer and his calling. Rather this than strike such a heavy blow to the food cause by this commingling of food with glass blowers, horse blankets, lightning eradicators and "drop a nickel in the slot and have your picture taken" machines, etc. Such things as these have nothing whatever to do with the stomach, nor any bearing whatever upon the health of the people. On the contrary, instead of forming part of the exhibits of an exposition devoted to food, they are a positive injury to the success of the food movement. If this thing continues the next thing in order at a "Food and Health" Exposition will be a shooting gallery, roulette table, balloon ascension, and last, but not least, a pie-eating contest."

STORM EXTRACTORS.

The notion that rain can be compelled to fall wherever desired by artificial agitation of the clouds has possessed men's minds—or, rather, some men's—for a number of years. A civil engineer in Illinois, named Powers, has recently published a book on the subject in which he maintains the soundness of the theory with much plausible argument and extensive citation of practical illustration, covering every country in which gunpowder is used in warfare. The author's argument is curious and cannot fail to impress the careful reader with the belief that the idea is at least within the limits of possibility. At all events, the Government has determined to give it a trial. The papers inform us that Professor Carl Myers, of Frankfort, N. Y., has recently returned from Washington, D. C., where he was called to consult with officials regarding the carrying out of an extensive scheme for promoting rainfalls in arid regions or during seasons of prolonged drought, by producing concussions in upper atmospheres, for which Congress has made appropriations. Prof. Meyers will begin operations with one hundred balloons of various sizes. The charges of mixed gases will be exploded at various heights through the medium of galvanic batteries and electric cables which will serve both to retain captive balloons and conduct the electric spark to explosive compounds. The necessary work will be done on his balloon farm at Frankfort, where the oxygen and hydrogen will be generated. Experiments will be made at Frankfort and near Washington; finally the sky-stormers will be taken to the arid regions of Texas, Colorado and other States. Theory and statistics favor the successful issue of the experiments.

VOLT AND AMPERE.

A simple explanation of two of the most common terms used in relation to electric currents was given recently by Mr. Edison in the course of a legal examination. Being asked by a lawyer to explain what is meant by the number of volts in an electric current, he replied: "I will have to use the analogy of a waterfall to explain. Say we have a current of water and a turbine wheel. If I have a turbine wheel and allow a thousand gallons per second to fall from a height of one foot on the turbine, I get a certain power, we will say one horse-power. Now the one foot of fall will represent one volt of pressure in electricity, and the thousand gallons will represent the ampere or the amount of current. We will call that one ampere. Thus we have a thousand gallons of water, or one ampere, falling one foot, or one volt, or under one volt of pressure, and the water working the turbine gives one horse-power. If, now, we go a thousand feet high, and take one gallon of water and let it fall on the turbine wheel, we will get the same power as we had before, namely, one horse-power. We have got a thousand times less current or less water, and we will have a thousandth of an ampere in place of one ampere, and we will have a thousand volts in place of one volt, and we will have a fall of water a thousand feet as against one foot. Now the fall of water or the height from which it falls is the pressure or volts in electricity, and the amount of water is the ampere. It will be seen that a thousand gallons a minute falling on a man from a height of only one foot would be no danger to the man, and that if we took one gallon and took it up a thousand feet and let it fall down it would crush him. So it is not the quantity or current of water that does the damage, but it is the velocity or the pressure that produces the effect."

SILICATE MOUNTAIN.—A mineral discovery of unusual value is reported from Kamouraska, in Lower Canada. A Quebec correspondent states that an entire mountain has been found composed of silicates, otherwise known as vitrifiable stone, of a purity certified by the provincial engineer to average 98 per cent. This material is used for the manufacture of the finest glass, and is believed to exist nowhere else on the American continent in such purity.

SUPERSTITIONS.

PREMONITIONS, COINCIDENCES AND MENTAL PHENOMENA.

Nobody can fully explain the states of his own inner consciousness, or tell the reasons why, when in apparent good health, the atmosphere is luminous with transcendental glory, and anon is shadowed by dimly comprehended specters. Many individuals have strangely recurrent coincidences or presentiments, which, considered abstractly, are—whether forewarnings of good or of evil—so frequently fulfilled that it is difficult to assume them to be casulties only. Science, however, is dumb in explaining the *rationale* of such phenomena. There are times and seasons when the entire firmament is rose colored, and then, without any apparent reason, the heavens are overcast, and we each learn this lesson anew, that the cause of our sorrows, discomforts, and misfortunes lies deep in the nature of things. Perhaps this is one reason why we pay attention to mystical forecasts, and there seems to spring into existence "the prophetic soul of the wide world dreaming on things to come." It is customary to say it is lucky to do a certain act at a certain time; it is unlucky to do certain things, or to leave undone this, that, or the other thing. If logically traced to the source from which such observation sprang, it is found all such superstitions are based on the law of coincidences. Take an individual in a slightly morbid or reflective state, and the dark side of human affairs thrusts itself upon his notice—the tyranny of the strong towards the weak, the cruelty abounding in nature, the transitoriness of all human affairs; and let a number of coincidences occur bearing upon some one of these subjects of thought, and a superstition is founded, which may be transmitted and become perpetuated from generation to generation. Many persons reject and ridicule the common superstitions found to exist quite as much among the intelligent as in the every-day life of the common people. The individual who sits at the table, making the company thirteen, will laugh and jest at the timorous anxiety of his hostess, who had—previous to his unexpected arrival—been to considerable trouble to avoid such a casulty, but will feel uncanny if he spill the contents of the salt jar accidently, and will hasten to burn some immediately, to ward off any evil effects which might otherwise occur in his business relations; or he will pass some anxious moments if he observes the new moon over his left shoulder, instead of his right, nor will he undertake anything important on Friday. Many persons who pride themselves on being proof against the folly of superstition yet feel uneasy if they do not observe the rules governing this bit of unreason in other people. Scientific scholars who have reasoned from effect to cause, who have accepted the fact that matter and force are indestructible—such minds may be observed to be influenced by the good will of Pussy, she having since the days of the Egyptians traditionally brought good luck to the house of her choosing; while the breaking of a mirror is supposed to bring misfortune seven years long to the unlucky possessor. The negro and Indian races are very superstitious; their comings and goings, their up-risings and down-sittings, are governed by a series of invisible laws that would render life one long nightmare to a sensitive and trained intellectual race. Among the negroes, after death the soul of the dead is supposed to be hovering around, and many devices are resorted to to appease the ghost, and to appease the ill will that may have been awakened by lack of reverence to the living and unseen portion of the departed in the handling of the dead. Still, if any person has a blemish—is lame, sick, bruised, or sore—he will not touch the dead, as his ailment is thereby rendered incurable; indeed, any one who assists in caring for the body of a deceased person will be sure to carry away something belonging to the deceased, to insure him against visits from the "duppy," or ghost. The flight of certain birds over the house and back again indicates a sudden death in the family. The beautiful turtle dove, from the plaintiveness of its note, is looked upon as a token of evil omen, foretelling serious misfortune or death if it lights upon the house. No "duppy" ever visits the living with good intent, but always to work harm. There are certain plants and trees given exclusively to be the habitation of the ghosts, and no negro will pass or handle one of the bewitched specimens of vegetation. The practice of dancing about the corpse is out of fear of vengeance to be now paid to any person from the ghost, as no one can make the circle who did harm (*i. e.*, administered poison) to the deceased, as he would, if guilty, surely fall into convulsions and die miserably. Occult methods of obtaining poison from plants and deadly snakes obtain, and may be administered so as to defy discovery; hence this disgusting practice of the dance of the death circle. Remedies are prescribed of so simple a nature that if no good is done, no harm can follow. Tying knots in a bit of woolen yarn, a knot for each wart, walking backward, muttering "de spiruts done settle down," with the knotted string held in the hand till near the fire, then rubbing the knots until slowly consumed, will cure the warts. A similar formula over a bit of wet paper plastered on the chest will cure hiccoughs. The hand of a dead person slowly rubbed over sore eyes, with the same formula, only "de spiruts done walk over" added, is a sure cure. Nails can be conjured from the joints of rheumatic patients by repeating a charm, and whooping cough cured by placing the child under a charm. The faculty for seeing "duppies" is given to those persons who at birth had a caul over the face. This membrane is treasured by the family with much care, as the possession brings good fortune and the power to fortell coming events. The Indians are quite as superstitious as the negroes, but they are a much more reserved and unsocial race, so it is much more difficult to ascertain the legends and explanations for their curious rites. An Indian will turn from his course and vary to the right or to the left without any explainable reason, apparently; he has come to a marching column of migrating ants, and has turned to one side to avoid crossing the route traveled by them. The worst of disasters would be drawn down on the unlucky mortal who failed to observe this rule. Birds are credited with having supernatural powers. The rain-crake, with its unearthly and melancholy cry, is a very prophet of evil. They are popularly thought to be the spirits of the departed come back to mourn and avenge injuries done to them in life. Eating together constitutes a sort of kinship, and he who breaks the bond will be detected by the ticking of a certain beetle. The neighing of a horse when you meet a stranger betokens trouble. To have a crow cross your path, flying over head, is a sure forerunner of sickness and death. Most of these superstitions can be read by the law of coincidences. Thirteen persons at table coincides with the unlucky number at the memorable supper in which Judas betrayed the sinless one and went to his own death. Spilling salt is coincident with the evils that accrued to the salt-tax gatherers during the French revolution. The strangest part of these coincidences—which, if observed until sufficient data are collected, may be termed analogies—is that there seems to be a certain unexplained law of the mind in its groping that often leads to new facts and discoveries. In his *Budget of Paradoxes*, De Morgan relates the following story or theory: "The late Baron Zach received a letter from Pons, a successful finder of comets, complaining that for a certain period he had found no comets, though he had searched diligently. Zach, a man of much sly humor, told him that no spots had been seen on the sun for the same length of time—which was true—and assured him that when the spots came back, the comets would come with them. Some time after, he got a letter from Pons, who informed him with great satisfaction that he was quite right; that very large spots had appeared on the sun, and that he had found a comet soon after." To make the story complete there should now be found a connection between the comets and the sun's spots. The curious thing is that just this paradox was maintained before the Royal Astronomical Society by Professor Ashe before De Morgan's book came out. I have known one who has the capacity for invention to make statements about the necessary mechanical appliances needed to produce certain ends, that sounded widely improbable; and yet the most improbable are now facts. The quadruplex system for use in telegraphy was dreamed of when to relate the dream was a tale of wild improbability. This has occurred many times, and allows a perfectly natural interpretation—as some other mind traversed the same road and solved his dream into practicability by creating the necessary steel and iron image to express an embodiment of his thought. Again, there have been well attested instances in which mind acts on mind independently of distances. It would be hard to prove that when we think—and that in spite of a determination to think of other things—of some absent person that he is thinking of us. But if in a number of instances a number of persons were to record such experiences and compare results, the law of coincidence would have great weight in determining the truth or fallacy of such a law. In trying to grasp an abstruse subject like the relation between mind and matter, there must, from the nature of the working medium, ever be many opportunities for fallacious reasoning—as it is impossible to speak of mind as affiliated with the body, with a brain and the nerve currents, without localizing the mind, and proving its habitat and absolute identity. Mental and bodily states are never identical, but contrasted. There is no means of effecting a compromise between them, and in trying to express thought about mind it is not easy to say anything without localizing it. There is the old difficulty to be met: Is mind found in every organ, or all in the whole? Leaving all this, however, and allowing the statement that mind is, indeed, as a phenomenon different from physical forces, but correlates more or less directly in strict proportion with these, mind must be admitted into the circle of correlated force. Of course, it is quite impossible to reduce the quantity or quality of mind force to any method of mathematical precision. Vitality, energy, mental qualifications, health, courage, love, irascibility, may have a standard in our own mind with regard to an individual, but we cannot reduce such qualities with mathematical precision, and cannot communicate to others with exactness our own idea. When taking into consideration the physical facts underlying the mental facts, it may show that widespread concomitant action of the nerve currents and the agitation of the brain that may account for many of the unexplained incidents, divinations, witchcrafts, and similar phenomena as a result of that tumultuous conflict, and exercise of energy in reconciling the union of the material to the immaterial, even among the inferior races of mankind.
—*M. J. Gorton, in Popular Science News.*

ART IN NATURE.

KATE FIELD DISCUSSES NATURE AS A SCULPTOR.

What looked like the fossil foot of a child, with a little stocking on, was sent in to the National Museum the other day. The most curious thing about it was that the stocking itself showed distinct signs of wear on the heel and ball of the foot. It was with regret, however, that the object was pronounced not a fossil nor a child's foot, nor yet anything else save a concretion of silicious matter which had taken this strange form by pure accident. The imitation was so astonishingly exact that the mistake was not at all surprising. This is only one of many curiously imitative concretions which have been offered at various times at the Smithsonian Institution by persons who imagined them to be fossils. That it may be understood how they are formed, it

should be explained that matter in general has a tendency to segregate particles of the same kind gathering together. In the Connecticut River, for example, fine clayey particles are held in suspension by the water and swept along with the stream. Perchance some of them will collect about a pebble, a grain of sand, or any other hard object, subsequently gathering more about them untill a lump of some size is formed, with the pebble or what not for a nucleus. Such lumps often take very queer shapes, and it is amazing how they sometimes imitate the familiar forms in nature. A favorite shape with them is one which so closely resembles that of a turtle that a specimen of the sort is, as a rule, mistaken for a fossil tortoise. Looking at it from beneath, the head, the four legs, and the tail are quite distinct, with the lines of the shell; and yet it is only an accidental concretion of clay. Spindles, rings, and Indian arrow-heads are other shapes which such concretions take very perfectly. But clay is not the only form of matter which takes concretionary forms; there is a mixture of carbonate of iron and clay, which assumes very interesting shapes in the same way. One of these, very common indeed, is easily mistaken for a fossil peanut. Break one of these peanuts open, and you will invariably find a small spiral winkle-shell, which was the nucleus. Even more interesting are the bigger concretions of this "clay-ironstone," as it is called, which, having got into dry places are dried by the sun. By this process such a lump is made to shrink, the water being withdrawn from it, and to crack towards the centre. Afterwards, maybe, through the rising of a stream after a drought, the lump becomes submerged again, and its cracks and fissures are filled in with carbonate of lime, which all streams carry. Now, take such a lump, saw it in two, and you find that the sawed surfaces are like the most exquisite marble, the original material being interspersed with streaks of the carbonate of lime crystallized. In one locality in England these clay-ironstone concretions are found of very great size, and are used, when cut into slabs and polished, for the tops of tables and stands. There is a final transformation which the clay-ironstone concretion occasionally goes through, that produces the most extraordinary result of all. It may happen that the carbonate of lime which has entered into the mass is subsequently dissolved out of it, leaving a chambered structure with walls and nothing else. People who find one such as this, very naturally imagine that it is the shell or skeleton of some remarkable dead animal, and take pains usually to send it to the nearest museum. Some time ago a physician sent to the National Museum a clay concretion, which he supposed was the fossil arm of a man. Another person contributed an extraordinary stone of great hardness, which, when sawed through was found to be of much beauty, though in the process it smelt very badly. When Curator Merrill saw the inside of it, and observed its formation in eccentric layers about a small hard object as a nucleus, he knew that it was a calculus from the bladder of a hog or some such animal. By a curious inverse method of concretion all agates are formed. When certain rocks, ages ago, were in a molten state, great bubbles came in them and remained, in the shape of cavities, when the period of cooling arrived. Into these cavities water, which percolates through all rocks, flowed, and deposited carbonate of lime. [Qy.—Silicic acid?—Ed.] upon the walls in layer after layer until the holes were filled up. Thus, when the rock is cut through, the lumps of agate are found. There is a queer sort of rock exhibited at the National Museum called "flexible sandstone," because it bends very easily. You take a long strip of it by one end in your hand, hold it perpendicularly, and it will bend so that it is hard to realize that it is not going to break into pieces. The reason for this is that the rock was once what is called a feldspathic quartzite; but water, percolating through it, dissolved out the alkaline substance, leaving the clayey matter. Thus the grains composing the stones are no longer held firmly together; it is loose-jointed, as one might say. It is found only on the surface of sandstone deposits, and is of no use in building. In Brazil this sort of rock is the matrix in which diamonds are found. Speaking of diamonds reminds me that the students of the subject have found in South Africa for the first time a substantial clue to the processes by which precious stones were formed. Every one knows that the diamond is pure carbon; but, albeit carbon is cheap enough, it has been found impossible to crystallize it profitably by artifice, though Professors Maskelyne and Cook have produced very minute diamonds in the laboratory. Nature performs her chemical operations on a large scale, and, of course, with superior facilities. The rocks at the South African mines are shales of a highly carbonaceous nature, and up through them has been forced in times past a great mass of eruptive rock in a molten condition, so as to engulf the shale. For a long time the mass remained slowly cooling, and incidentally to the process the carbon in the shale was crystallized out in the form of diamonds. Afterwards the rock decomposed and rotted away—for rock will rot like anything else—forming the blue clay from which the diamonds are dug to-day.

ELECTRICAL HEATING.

A HINT FOR THE PROTECTION OF RAILWAY TRAVELLERS.

Now and again one hears of electric heating in a vague kind of way that would hardly lead anybody to suppose practical results had been obtained. But the fact is that the electrical heating apparatus is already in quite general use and that several companies have been formed for its introduction. One of the earlier forms of electric heaters, which was especially designed for street-car use, is not unlike an ordinary radiator, and has also been given a shape resembling that of the familiar metal foot-warmer. The rapid increase in the number of electric street-cars in our northern latitude has given a stimulus to ingenuity in this field, and a new heater has been brought out, which, for simplicity and economy of space, seems hard to excel. It consists of a narrow strip or ribbon of asbestos, inclosed in sheet iron, about three inches in width and one-quarter inch in thickness. This strip is placed under the car seats, extending from one end of the car to the other, and is protected by a wire screen. A second strip of the same dimensions is attached to the first as a kind of compressing plate, and the wires are imbedded in the asbestos. These strips are given a zig-zag form, so as to increase the length of radiating surface exposed in a given area. The current being turned on, the wires, by means of the resistance they are purposely made to offer to the current, become very hot, and this heat is radiated, therefore, steadily and equably throughout the car. A more agreeable means of heating it would be hard to imagine. No space is taken up by the stove, nor are any of the seats rendered unpleasant by proximity to the heating apparatus. One part of a car is just as warm as the other, and by means of various methods of arranging the strips the degree of heat can be regulated to a nicety. There is no need to get the car ready for the approach of winter nor to make any special arrangement whatever, other than the simple attachment of the strips under the seats. All that is necessary when heat is wanted is that either the driver of the electric car or the conductor shall switch or turn on the current through the heating apparatus, and thus the same agency which propels the car and lights it also provides it with warmth. The question which comes into one's mind on riding in one of the many electric cars now equipped in this excellent manner is why something of the same kind cannot be rendered available for office or household use. The probability is that it soon will be. In speaking of electric car heating at a recent street railway meeting at Columbus, O., one of the members stated that he had a little heater in his house which the laundress at any time connected up with one of the incandescent lamp sockets, and by means of which she ironed all day, the iron getting only so hot and never any hotter. Cooking is very often done in this way also now, and with the general extension of lighting circuits we may look for an enormous number of inventions in apparatus for using electric heat in the family. The change will go even further than this, for if heat can be brought into an office or a house through the agency of a small wire, there is certainly no need to convert the cellar of every house into a miniature coal mine, with all the attendant nuisance of running a furnace or open fires and then getting rid of the ashes. It is quite within the bounds of possibility that at no distant day our heat will be gently radiated for us from the wall paper, and light supplied to us from a luminescent ceiling, and all by the simple pushing of a small button in some obscure corner of the room.—*Amateur Electrician.*

An Old Timer.—A man in Germany has constructed a clock which will run 8,000 years. The maker has warranted it to run without stopping and without winding until midnight of the year 9999.

Cultured Liberalty.—Bernhard't nine performances in Boston aggregated $43,889,37, the largest amount ever drawn in that city by any actress or singer in the same number of appearances.

Mutal Marriage Society.—The girls attending college at Columbia, Mo., have organized a sort of marriage mutual aid society that is working very satisfactorily. Every time one of the members has a gentleman escort to whom she is not engaged she pays twenty-five cents into the treasury. When a member becomes engaged she pays in five dollars. When a member gets married the club makes her a wedding present of $100.

Bonnets and Birds.—Olive Thorne Miller has posted, from her home in Brooklyn, 20,000 printed slips, asking the women of New York not to wear birds or their plumage. And the women of New York go on wearing birds and birds' wings until, according to dealers, the demand for this style of ornament is greater than ever before. The only consolation in it for Mrs. Miller is that she has done her duty.

Reckless Hypnotism.—The *British Medical Journal*, in commenting on a case of hypnotism described in a New York Medical paper, insists that England shall pass laws to prevent the reckless practice of hypnotism in Great Britain. The article expresses regret that reliable information is at hand that several physicians of standing are travelling in England under assumed names and practising hypnotism upon all applicants, regardless of risk to health and life.

Paper Pulleys,—One ingenious French machine-tool builder, M. Burot, of Angouleme, is turning out paper pulleys for power transmission, based on the principle of the paper car-wheel. The pulleys have metal hubs and arms, on which the soft paper is poured and then compressed. After drying, the paper pulley is treated in a bath of linseed oil and resin, to give it a greater resistance against the influence of moisture. The pulleys are said to be very light and of low price, and to have given excellent results in practice.

Rough on Microbes.—The occult but riotous bacilli which have played havoc with man since they first met have reached a crisis in their existence never known before. As Matthew Arnold would say, man is "onto them." They are being hunted and brought to light, and the medical searchers all join in the hunt for something to poison Koch's poison, for the bacillus of what is known as consumption is now said to be the first of an unprecedented group of new poisons that shall destroy some of the most important human diseases, such as diphtheria, lockjaw, and various fevers. The lion-headed Bilroth, the first man-cutter of Europe to-day, is reported to be on the verge of beginning the scientific elimination of cancer. Sir Morell Mackenzie was quoted yesterday as speaking hopefully of coming developments in medicine that will revolutionize its powers. Man awaits in the next few years an amount of physical regeneration and purification such as has not been equalled in all his previous existence. —*Sun.*

ANIMAL ECONOMY.

EVIDENCES OF GOVERNMENT SYSTEM AMONG LOWER ANIMALS.

Discussing the assertion of Grote that "positive morality, in some form or other, has existed in every society of which the world has had experience, Mr. J. W. Slater says, in the *Popular Science Monthly* for March: Whether the author just quoted knowingly or intentionally referred to the societies of the lower animals, as well as to those of mankind, I am not aware. Perhaps, if he had no such intentions, his testimony may be regarded as all the more valuable. Assuredly the ant-hill, the wasp's nest, the rookery, or even the roaming herd of elephants, antelopes, peccaries, or the like, could not cohere, and, therefore, could not continue to exist as such without some kind of law and government. Such law, too, must have its foundations laid, not exclusively in the physical force of the individual, but in part upon notions of right and wrong, however vague and crude. In a herd of bisons, of wild horses, of elephants, or in a troop of baboons, the strongest, generally a male in the prime of life, possesses and exerts a certain supremacy. He holds exactly the same position as does the chief of a savage human tribe; holds it by the same tenure and exercises it in a very similar manner, and subject to the same limitations. That his authority is not absolutely uncontrolled, we may learn from the fact that the male adults, who live in exile, are always the largest and most powerful. Among birds the moral life is more highly develcped than among mammalia, as we may learn from their being more monogamous. Hence, with them, individual superiority sinks very much in the background. The rookery or the heronry seems to form a republic where all are subject to a code of laws, which the majority is always ready to put in force against any offender. The queen bee holds her position by the right of the strongest as against all rivals, and, in the birth or the introduction of another female, she is always bound to do battle to the death for her position. But her sway over her subjects—if such we may consider them—unlike that of the strongest tusker in a herd of elephants, rests nowise upon physical force. Many facts prove that the lower animals recognize property, and distinguish as clearly as do many men between *meum* and *tuum*. When trespassing they plainly know that their quarrel is not just, and conscience ofttimes makes cowards of them. The garbage heaps of Rome are all appropriated by the dogs, each being the fee simple of some particular dog, who will not suffer his claim to be invaded. The homeless dogs of Constantinople have their particular quarters of the city, into which no dog, save the regularly established canine inmates, can intrude without the risk of being torn to pieces. A spider, unless greatly superior in size, hesitates to invade the web of another spider for marauding purposes. Ants consider themselves rightfully entitled, not merely to the city they have built, and the roads they have laid out, but to the whole neighboring territory, and they will brave any odds in its defence. We may go yet further. Not only do animals feel a right to such possessions as they have acquired by custom, by first discovery, or by labor. Such right among social species is recognized by public opinion, and is enforced by positive law. As an instance, it has been frequently observed in rookeries that a particular couple of rooks, too lazy to fetch building materials for themselves, and given to plunder their more industrious neighbors, have been formally punished by the community. "Crow courts," or "crow parliaments," as they are locally called, have been observed in various districts. These are prolonged meetings in which, after much noise, sometimes proceeding from one bird, sometimes from a small number, and then again from the general assembly, a single rook is attacked by the community and put to death. These executions do not seem to be connected with any inroad upon property, and we have reason to suspect that we have here proceedings for offences against the person, or the general well-being of rookdom. The laws of ants are probably more complete and intricate than those of the rookery. In the ant-hill the individnal is completely absorbed in and subjected to the interests of the community. Nationality among the lower animals shows itself in two very different types. Among vertebrates, the nation, wherever it exists, is composed, as in the human species, of a number of families, monogamous or polygamous, as the case may be. Among insects the social unit is not the family, but the individual. In the case of the hive bee, one might say that the family and the nation are coextensive. Among ants this is not the case, since in every well-established ant-hill there are several queens, so that the community is not linked together by blood. It may be contended that the absence of the family, viewed as a something which for most individuals has claims stronger than those of the state, is the cause which has permitted the successful organization of communism in insect societies. Among ants, bees, wasps, etc., the state has no rival; the great majority of the social species are neuters, incapable of domestic attachment, and devoted to the community alone. To attempt, without the existence of neuters, to introduce among mankind the social arrangements of the ant-hill, is a baseless scheme. Concerning the government of social insects we are as yet utterly in the dark. We see works undertaken, altered, and extended, criminals executed, guards set, food brought in, nuisances removed, expeditions planned, and wars waged, but we do not see the guiding spirit. If the various functions of a human community were left to the spontaneous initiative of all comers, we should have sad confusion.

BELLAMY'S VISION.

FAILURE OF THE NATIONALIST THEORIES WHEN PRACTICALLY ATTEMPTED.

Several experiments with nationalist theories are being tried on a modest scale in various parts of the country. One of the most interesting, which was not intended as a test of Bellamy's ideas, recently met with lamentable failure at Evanston, Ill. That was a co-operative food supply scheme, which failed through a combination of unfortunate circumstances, but which deserved success. It was undertaken by about forty families of the best people in the artistocratic suburb of Chicago, and the servant nuisance was the exasperating cause. The housewives of Evanston found it impossible to secure competent servants at fair or any wages. This seems to be the universal complaint of surburban wives, and no doubt the women in thousands of homes will sympathize heartily with their sisters of Evanston in their desperate search for a remedy. The evil in Evanston was a little worse, perhaps, than that which exists in the outlying districts of Eastern cities. The advance on city wages which the Evanston women were willing to pay was not sufficient to induce capable servants to live outside of Chicago. Such servants as were willing to go out to suburban service were pretty sure to have some serious defect in character or capacity. The most common fault was in temper, and it was a comparing of experiences with impudent "help" which led to the suggestion of a co-operative kitchen. Husbands were consulted, and the idea rapidly took shape. About forty families, numbering 200 persons, agreed to patronize the kitchen. Plenty of money was forthcoming. Quarters were established in the centre of the town, and the equipment of a well-appointed hotel kitchen was provided. The undertaking was to deliver well-cooked meals ready to go on the tables three times daily at the homes of the subscribers. To do this required three or four peculiarly fitted delivery wagons. Each family was served with food in what was termed a "kitchener." This was a tin affair of about a foot deep and two by three feet horizontally, divided into compartments, and each compartment surrounded by hot water. In addition, the wagons each carried a small stove to keep the food hot. This portion of the arrangement was the only one that was in the nature of an experiment, and it accomplished everything that was expected of it. Except that from five to fifteen minutes elapsed in getting the food from the kitchen to the dining-room, the plan was the same as that of a hotel with 200 guests or a big restaurant. Bills of fare were sent out each evening for the succeeding day, and the subscribers ordered their meals for the following day on blanks prepared for the purpose. If guests arrived unexpectedly, they could be provided for at fifteen minutes' notice to the steward. The only difficulty met with in delivering food satisfactorily was that it was found impracticable to serve eggs, for the hot water in the kitcheners was sure to add a little to the cooking process in transit and render them overdone when delivered. But soups, roasts, steaks, vegetables, puddings, &c., were delivered, so the subscribers said, in as palatable condition as though they had just come from their own kitchens. The failure was one of administration. The steward first employed was incompetent and extravagant. There was an interval of bad management before another was secured. The next man was a good one, but his health collapsed in two or three weeks, and then the subscribers got discouraged. They had other things to discourage them. The discharged servants made an awful fuss. Each family had retained at least one servant in its employ, most of them discharging their cooks only. Some of the girls who were retained in other capacities struck. A sort of servants' league was formed in the town, to boycott the subscribing families. Then the local tradesmen got jealous, and made trouble when the steward of the co-operative association bought supplies of the wholesale grocers in Chicago. The steward went to a large wholesale house in Chicago and ordered a big bill of goods. "For what hotel is this?" he was asked when the order had been taken. He replied that the supplies were for the Co-operative Housekeeping Association. "I'm sorry, but we can't take your order," was the answer. "If we sold goods to you we would be boycotted by every retail grocer in Evanston." So the Evanston people got disgusted and made up their minds to put up with the insolence of their individual cooks rather than worry any longer with the obstacles in the way of co-operative housekeeping. The experiment began in November and it ended ingloriously two months later in January last. Then the discharged servants got their revenge. They had prophesied the failure of the co-operative experiment from the start, and they had determined to boycott the forty families after the collapse as well as before. Sad times those forty housewives had in getting new cooks to preside in their kitchens. It took a good deal of money and infinite trouble to secure from various sources the culinary skill that was denied them in Evanston. And according to last accounts their troubles are not over yet. Another experiment more avowedly nationalistic is interesting people in San Francisco. It is a Bellamy boarding house and other forms of co-operation, with religious features added. It was established a few weeks ago by Arthur W. Dowe, who is at the head of a co-operative scheme which he entitles the "Commonwealth of Jesus." Of course the name has given the impression that the institution is a crank's scheme. The house was opened with fourteen inmates. Dowe says that they get board for $5 a week which elsewhere would cost $8 or $10. It is proposed to have three classes of members. Full active members are expected to turn all their property over to the society and to hold all property in common with the other members. Active independent members will retain their individual property, but will turn all the net profits into the society treasury and enjoy all the social features. Honorary members will be those persons who patronize the co-operative stores and restaurants which are to be established. Regarding the plan for co-operation

stores the secretary, W. Everett Stone, says: "We will sell checks for $1 and upward, punch out the amount of purchases at current retail prices, and at the end of six months or so, when we decide upon a dividend, holders of checks will get 75 per cent. of their share of the net profits of the store. We will soon start a co-operative restaurant on much the same plan. Meals will be given for about 25 cents. It is surprising how many interested inquirers come or write to us. We have not yet got started according to our full plans, and no active members has yet turned their property into the treasury."

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

April.

MEAT.—Beef, lamb, mutton, ham, kidneys, liver, sausage, veal.

GAME AND POULTRY.—Brant, pigeon, chicken, duck, turkey, goose, snipe.

FISH.—Anchovy, bass, cod, snipe, eels, carp, catfish, flounders, halibut, herring, lobsters, mackerel, mussels, oysters, perch, rock-fish, salmon, smelt, white-fish, trout, sturgeon.

VEGETABLES.—Artichokes, beans, carrots, celery, garlic, lettuce, onions, parsley, parsnips, potatoes, shallots, spinach, turnips, watercress, radish, rhubarb, sea kale.

PRACTICAL RECIPES.

KIDNEY SOUP.—Take enough kidneys to make two pounds, a carrot, a turnip, an onion, two potatoes, cayenne and salt. Put half the kidneys in four quarts of water and cook slowly until well done; take them out and chop very fine, return to the water with the rest of the kidney cut into small pieces; grate or chop very fine the vegetables, add them to the soup, cover closely and cook slowly for an hour and a half.

BEEF WITH CURRIED RICE.—Take two pounds of lean beef cut from the round in slices, not chunks, and stew it in a little water with a carrot, a stalk of celery, half a turnip, an onion and some parsley, all chopped very fine, until it is quite done; season with salt and pepper; the vegetables should be boiled to a pulp and the gravy thick and rich. Boil some rice in slightly salted water; when it is done and quite dry add to it a lump of butter and some curry powder. Put the beef on a platter with an edge of the rice, and serve very hot.

BROILED SHAD.—Select a fine roe shad and a dozen oysters; split the fish down the back and remove the spine, wash and dry it, cut slashes in it and lay it for an hour in a dressing made of two large spoonfuls of olive oil, a teaspoonful of lemon juice, salt and pepper. Take from the dressing and broil it nicely; cut the roe into pieces the size of an oyster; dip them and the oysters also in beaten egg and bread crumbs and fry them in boiling lard. Serve the shad with these around it garnished with parsley.

SHRIMP SALAD.—Cleanse a crisp head of lettuce and lay it in a salad bowl. Shell a pint of shrimps and pile them on the lettuce. Mince two hard boiled eggs fine and sprinkle them over the shrimps, with a large spoonful of capers; over all pour a mayonnaise dressing.

ORANGE FRITTERS.—Make a batter of half a cup rich milk or cream, one well-beaten egg, a teaspoonful of melted butter, a pinch of salt and two tablespoonfuls of flour, in which is sifted one-quarter teaspoonful of baking powder. Peel four or five large oranges, divide them into sections, remove the white skin, dip each piece first into sugar, then into the batter and fry a few at a time in boiling lard. Serve with powdered sugar.

COCOANUT CUSTARD.—Beat well, without separating, the whites and yolks four eggs, add to them a scant quart of milk, half a cup sugar, a teaspoonful of butter, a little grated nutmeg and half a cup of fresh grated cocoanut. Bake in a steady oven until the custard is set. Serve very cold.

SHIRRED EGGS WITH CHEESE.—For six people take one pint of cream, four ounces of Parmesan cheese, a little cayenne and six eggs. Put the cheese and two-thirds of the cream and the dash of cayenne together in a saucepan and cook them till they are thoroughly incorporated and quite smooth, then pour the mixture on a buttered dish and put over it the rest of the cream which has been warmed. Break the eggs into this, sprinkle with little more cheese and cook in a hot oven until the whites of the eggs are firm; it will take about four minutes. Serve at once.

WOMEN'S CLUBS.

JENNIE JUNE GIVES AN EXHAUSTIVE ANALYSIS OF THE SUBJECT.

A paper on "Women's Clubs" by Mrs. Croly of Sorosis, was read last week at the Woman's Club of Worcester, and their invited guests from other clubs of Massachusetts. Introduced by Mrs. Stone, president of the Worcester Club, Mrs. Croly began by saying it was much easier for her to "talk back" than to "talk forward," and so hoped the ladies would ask questions upon her paper that she might speak more fully upon the subjects that concerned them. Women's Clubs at first, so runs the paper, shared the fate of women, were declared non-existent. The original idea of clubs is a banding together of persons on equal ground and joint expense for any object they may choose. Oliver Goldsmith, one of the original "nine" of "The Club," had the word "literary" struck out as needless. Clubs should be based on unity, equality and fraternity. Women's clubs are broadening. While many men's clubs go no further than cigars, whist and wine, women's clubs are educational and instructive, giving a knowledge of methods, teaching to advise and weigh, to see the good and ignore the evil, to recognize the smallest things as of value, to see clearer, to hear more keenly, to perceive more accurately, and to show that no one has a right to throw contempt on anything in this universe. "Getting wisdom" is the inspiration of clubs. To mothers left behind, incapable of sharing the questions of their children, outside of the money-getting, and not keeping up with the affairs of the world, came an uprising, a protest against the condition of women, bringing out a spirit of fellowship among them. She then warned concerning some of the dangers incident to prosperity. What one has done, another desires to do. A hobby or collection of hobbies takes away freedom, and the club ceases. The club is a school, and to many the only school within reach. The paper was ended with questions sent to her by different clubs. Mrs. Croly was then asked about the rapid growth of some clubs, and responded by telling of the club at Dayton, Ohio, begun three years ago by home-making, home-loving women, who wished to keep up with the times, limiting their membership to twenty-five. A second meeting was called to enlarge their number to seventy-five. When formed as a club they all took hold of hands and—cried. Their seclusion was broken; neighbors who before were unknown now felt for the first time the strong bond of fellowship. They felt uplifted, as though they beheld a new heaven and a new earth. They have gone on in good work and now number two hundred and fifty. A Boston lady asked if insurance clubs for women had been formed, to which Mrs. Croly answered in the negative, though the question had been brought up in Sorosis ten years ago. There are but two insurance companies in New York who take policies on women, and only one justly. In London there are several—the Sisters' Friendly Society, Oxford Working Woman's Society, Scottish Woman's Benefit Society, etc. What have women's clubs to do with practical charity, when there are so many organizations for that purpose? The Philadelphia club and the Chicago society do a great deal of charitable work not possible for all clubs; but clubs may study practical methods of help, and find that to make the poor self-supporting is better than to give money. Do clubs have associate members? There are none in Sorosis, though some are known as remote members, who, though living in a distant city, have sometime been full members. Remote members have the rights of full members when in the city, though are not expected to pay dues. There are also honorary members, but associate members are doubtful help. The presiding officer asks the meaning of a "full" member. Answer—One who brings head, heart, hands and feet into the club, consecrated to work, who takes a side place until she is needed, who is not absent, nor loses her interest, who does not look on with indifference, but with alert intelligence, and considers the club a whole of which she is a part. How many members has Sorosis, and do all share the work? Answer—There are two hundred. No endeavor is made for each to work in an active sense, or would it be desirable. Quiet inspiration is needed from some. There are nine standing committees, on art, science, music, drama, literature, house and home, keeping in *rapport* with activities as they move along, keeping the progress of the world before the club. Much depends upon the genius of the chairman of these committees. What do you think of rotation of office, and what is the most harmonious means of appointing a nominating committee? I am against it, for it is a club danger. Keeping to a rut narrows, it is true, but it is not well to change every year or two. The president must have experience and some element of permanence. As transplanting too often retards the growth of the plant, so with offices. Make your term two years with possibility of re-election. The good of the club, not personal feeling should be considered. New blood is needed after a time. If the wrong woman be put in because a change must come, great harm can be done. Question if the club wish for her, not she for the office. The woman who tries for it is not the one needed. It is the business of the club to elect their president, not ask if she wishes the office. Should the president be chairman of the executive committee? No, a wide division should be made between the controlling of the whole club and the controlling of the business part. The president should be a woman of influence, not especially of power, and not to do energetic work; one to keep the machinery oiled, not to start the power or keep it running. All, though, are subject to the club itself. Should there be proscribed conditions of entrance to clubs that would be sure of full members? That depends upon the working influence of the club. People grow into members by cultivating themselves. All things, powers, can be cultivated. People antagonistic at first (don't try to get rid of them) can be assimilated. Cultivate sympathy for even that which you do not like. Learn sympathy. Part of us is in everything, part of everything in us. Sympathy translates; looks into other minds and sees something to copy. Recognize what is valuable in others. True growth toward heaven is to recognize the good in every other person and ignore or fraternize with what we do not like until we do.

MERELY A SPECTATOR.—"What office are you a candidate for?" inquired the reporter, who was making his hasty rounds of the polling places. "Me?" exclaimed the man leaning up against the door frame. "Thunder! I ain't running for anything. I was born in this country."

WOMAN'S WORLD.

WHAT IS DONE BY SOME OF THE WOMEN WE HEAR TALKED ABOUT.

The Princess of Wales is a first-rate photographer. A London woman has a class of 100 cooks, to whom she gives "entire dinner lessons." The bridal train of the daughter of Princess Victoria Louise, daughter of Princess Christian, is to be made at the Royal School of Art Needlework. Mrs. Leland Stanford gives $60,000 a year to charitable objects and keeps a number of women employed in making pretty home decorations for her Washington and California houses. The Queen of England firmly believes that objects made by blind people bring luck, and she has had the cradle for the young Princess of Battenberg entirely made by blind men and women. Miss Kingsley, daughter of Charles Kingsley, has been awarded the decoration of the French academic palms, with the grade of "Officer of the Academy," for her valuable writings upon French art. Drunkenness is said to be the besetting sin of London flower girls, and Mrs. Franklyn Taylor is establishing guilds in various parts of the city in which the flower girls may find shelter and keep their flowers. The Princess Louise of Schleswig-Holstein, who is soon to become a bride, is a tall and very handsome young woman. Her shoulders, arms and neck are perfectly proportioned, and she has pretty dark blue eyes. Mrs. Amelie Rives-Chanler is now at San Remo, where her health is sufficiently improved to allow her to disport in picturesque get-ups. Her favorite costume is a tan-colored gown, low shoes to match, and brilliant cardinal hose. Miss Wanamaker, daughter of the Postmaster-General, is going abroad in time to be presented at the drawing-room the Queen holds in June. The order for the gown Miss Wanamaker is to wear then is already in the hands of Worth, and he is busy preparing designs to be submitted to her choice. Miss Jeannettee Gilder, editor of the *Critic*, and sister of Richard Watson Gilder, is a tall, slender woman, rather masculine in feature and, whether in her editorial chair, on the street, or at home, her severely simple toilets vary but little in color or design. Her trim, compact, dark cloth gowns are usually made with a small coat and vest that open slightly to disclose a bit of white shirt front, dark satin tie and high collar, while wide linen cuffs encircle her wrists. Louise Lawson, the sculptor whose statue of Sunset Cox is occasioning considerable comment just now, is a bit of a woman, with golden-brown hair, gray eyes, a lisp and a vivacious manner. She wears when working in clay a dark blue blouse and trousers, and her studio costume is always of white linen—skirt and coat—the latter finished with extraordinary collar of coarse embroidery tied with the traditional knot of baby blue ribbon. With this costume yellow shoes are worn. The whole effect is rather more bizarre than attractive. Reports on all sides say that Princess Maud, the Prince of Wales' youngest and most loved child, has blossomed during the past year into a bewitching beauty, full of vivacity and charm of manner. So, too, another of Queen Victoria's grand-daughters has become lovely. The Duchess of Sparta, Princess Sophia of Prussia, third daughter of the Empress Frederick, has become, since her long illness of last year, greatly improved in appearance. She is fresh-complexioned, and has the carriage, regular features and blue eyes of her handsome father. When she went to Athens as a bride her figure was much to portly for one so young; now, it is sylph-like, and she further improves it by wearing cloth dresses made in London, and silk ones made in Paris. Princess Sophia was her father's darling, and is the favorite with her brother, the young Kaiser, who lavished presents and attentions upon her at the time of her marriage.

TO MEND GLASS.—Isinglass boiled in spirits of wine will produce a transparent cement which will unite broken glass so as to render the fracture almost imperceptible.

WHEN SEASONS CHANGE.

One of the more beautiful features of the year is afforded by the changes which occur when one season passes into another. These splendid changes, whereby nature preserves the even balance and order of things, was welcomed in the past as an unspeakable blessing. To-day they are dreaded by the majority of civilized people, as being fraught with desease. To a certain extent this fear is justified by the facts, but the reason of the danger and the danger itself lie in the artificial and unhealthful conditions of life which civilization has given birth to and not to any particular season. So far as nature is concerned, the physical activity of a person changes from time to time to meet external conditions. The heat of summer requires a larger use of lungs, glands and pores than does the cold of winter. The spring puts greater demands upon the locomotor muscles, while the autumn brings mostly in use those of the upper parts of the body. In this manner each portion of the organization receives a normal amount of exercise and a condition of health and strength is the natural result from the beginning to the end of the year. Civilization has revolutionized the natural modes of life. What with clothing and fuel, our bodies live in a perpetual summer or tropical climate, broken only by sudden draughts and short chills. We eat and drink more than we require, and use the same food and beverages the year through. We take insufficient care of the skin, and scarcely any care whatever of the interior of the physical system. The result is familiar to all. The blood slowly fills with impurities, which are transferred to the external and then later to the internal tissues. The vital organs act insufficiently or morbidly. A general feeling of malaise or debility is the first symptom of ill and that is invariably followed by one or more specific diseases. The slightest external cause is enough to bring about these results when the body is in the condition described. As the greatest external causes are the changes in temperature and moisture, the period at which the largest amount of sickness

Buffalo Lithia Water, Spring No. 2, in Bright's Disease, Gout, Stone in the Bladder, and Diseases Generally of Uric Acid Diathesis, Etc., Etc.

DR. WM. A. HAMMOND, of Washington, D. C., Surgeon General U. S. Army (retired), Professor of Diseases of the Mind and Nervous System in the University of New York, etc.

"I have for some time made use of the BUFFALO LITHIA WATER in cases of AFFECTIONS of the NERVOUS SYSTEM, complicated with BRIGHT'S DISEASE OF THE KIDNEYS or with a GOUTY DIATHESIS. *The results have been eminently satisfactory.* Lithia has for many years *been a favorite with me in like cases, but the* BUFFALO WATER CERTAINLY ACTS BETTER THAN ANY EXTEMPORANEOUS SOLUTION of THE LITHIA SALTS, and is, moreover, better borne by the stomach. I also often prescribe it in those cases of CEREBRAL HYPERÆMIA resulting from OVER MENTAL WORK—in which the condition called NERVOUS DYSPEPSIA exists—*and generally with* MARKED BENEFIT."

DR. WM. B. TOWLES, Professor of Anatomy and Materia Medica, in the Medical Department of the University of Virginia.

"BUFFALO LITHIA SPRINGS, No. 2, belongs to the ALKALINE or, *perhaps, to the* ALKALINE SALINE Class, *for it has proved far more efficacious in many diseased conditions than any of the simple* ALKALINE waters.

"*I feel no hesitancy whatever in saying that in* GOUT, RHEUMATIC GOUT, RHEUMATISM, STONE *in the* BLADDER, and in all diseases of URIC ACID DIATHESIS, *I know of no remedy at all comparable to it.*

"*Its effects are marked in causing a disappearance of* ALBUMEN *from the urine. In a* single case of BRIGHT'S DISEASE *of the* KIDNEYS, I witnessed *decided beneficial results from its use, and from its action in this case I should have great confidence in it as a remedy in certain stages of this disease.* In DYSPEPSIA, especially that form of it in which there *is an excessive production of* ACID *during the process of nutrition*, in some of the PECULIAR AFFECTIONS *of* WOMEN, notably in SUPPRESSION of the MENSES, and in CHRONIC MALARIAL POISONING, etc., I have found it highly efficacious."

DR. G. HALSTEAD BOYLAND, late Professor of Surgery, Baltimore Medical College, late Surgeon French Army (Decorated), Member Baltimore Academy of Medicine, Member of American Medical Association.

"In BRIGHT'S DISEASE of the KIDNEYS, ACUTE or CHRONIC, BUFFALO LITHIA WATER, Spring No. 2, is, in my experience, *without a rival*, whether in the PARENCHYMATOUS form or INTERSTITIAL NEPHRITIS. In cases in which the ALBUMEN in the URINE reached as high as 50 per cent., I have known it under a course of this water gradually diminish and finally disappear, at the same time other alarming symptoms were relieved and the sufferers restored to health.

"In STONE in the BLADDER of the RED LITHIC ACID and the WHITE PHOSPHATIC DEPOSIT, the SOLVENT power of this water is *unmistakable.*"

Water in cases of one dozen half gallon bottles, $5.00 f. o. b. here.

THOS. F. GOODE, Proprietor, BUFFALO LITHIA SPRINGS, VA.

Indigestion

Horsford's Acid Phosphate.

A preparation of phosphoric acid and the phosphates required for perfect digestion. It promotes digestion without injury, and thereby relieves those diseases arising from a disordered stomach.

Dr. E. J. WILLIAMSON, St. Louis, Mo., says: "Marked beneficial results in imperfect digestion."

Dr. W. W. SCOFIELD, Dalton, Mass., says: "It promotes digestion and overcomes acid stomach."

Dr. F. G. MCGAVOCK, McGavock, Ark., says: "It acts beneficially in obstinate indigestion."

Descriptive pamphlet free.

RUMFORD CHEMICAL WORKS,

PROVIDENCE, R. I.

BEWARE OF SUBSTITUTES AND IMITATIONS.

Caution:—Be sure the word "Horsford's" is *printed* on the label. All others are spurious. Never sold in bulk.

Fine Table Wines

From our Celebrated Orleans Vineyard.

Arpad Haraszthy & Co

Producers of the

ECLIPSE CHAMPAGNE,

530 Washington St. SAN FRANCISCO.

GENERAL AGENCIES:

NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOSEPH R. PEEBLES' SONS CO., 73 West Fourth Street.
DETROIT: G. & R. MCMILLAN & CO., 131 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.

occurs are usually when the seasons change. The remedy for these unpleasant circumstances is easily found. It consists in keeping the pores active, the vital functions in good condition, the bowels open and the blood pure, This is accomplished in many ways but in none so quickly, pleasantly and cheaply as by the use of Ayer's Sarsaparilla, the superior blood-purifier—the one recommended by physicians and chemists of every school of thought and practice. It expels all impurities from the blood as well as from the tissues, it stimulates all the vital functions, and restores those which are lethargic to their natural activity and thus brings back the health and strength without which life is an unmixed evil. Above all, its action is so gentle that it interferes with the action of no organ, and occasions neither pain, nausea, nor disagreeable after effect. It should be used not only as a remedy, but as a preventive. Whenever any unpleasant or suspicious symptom appears, Ayer's Sarsaparila removes it in driving away the impurities in the blood, by which it was originally produced.

BUSINESS NOTES.

HORSFORD'S ACID PHOSPHATE

Makes an invigorating drink with water and sugar only. Delicious. Dr. E. T. Gauneau, Superior, Wis., says: "I have used it in cases of nervous debility and overworked brain, with the utmost satisfaction." Beware of Imitations.

A GREAT CYCLOPEDIA.

The twenty-second volume of the Columbian Cyclopedia is announced as just ready; the entire set is to be completed the present year, in 32 volumes, aggregating about 26,000 pages. Its price is remarkably cheap, only $25.00 for the entire set, with easy installment terms to those who want them. The high character of the work is vouched for by innumerable witnesses, among others by Prof. James Strong, S. T. D., editor of McClintock & Strong's Cyclopedia of Biblical, Ecclesiastical, and Theological Literature, who speaks of it as follows: "The Columbian Cyclopedia seems to me to strike a happy medium between the loose, superficial works, and the too elaborate and profound ones, which few are competent or desirous of using. Most of the larger general cyclopedias are overloaded with a mass of technical science and official detail that is embarrassing and useless to ordinary readers. The Columbian is eminently practical, sufficiently full, and carefully compiled, well got up, convenient in form and extent, remarkably cheap, and, as I should judge, admirably adapted to families and general consultation I think that if properly presented to the public it will have a very wide sale, and be an exceedingly useful work. There is ample room in the market for a Cyclopedia like this, which combines, likewise, the advantage of being an excellent Dictionary of the English Language." For free specimen pages, address the publishers, The Columbian Publishing Co., 393 Pearl Street, New York.

SUBMARINE BOAT.—The French submarine boat "Gymnote" was recently tried at Toulon, and demonstrated its ability to pass through a blockaded line and escape attention in spite of systematic efforts to watch, trace, or discover its course. According to the *Revue Industrielle*, it plunged and remained under water forty minutes. It rose to the surface at a distance of more than two miles and a half from its point of departure, and had passed under the watched line of demarcation without being seen. After having ascertained where it was, it reimmerged to return. It again crossed the line, but this time two of the parties on the lookout for it got a glimpse of it, not, however, sufficiently distinct to enable them to trace and pursue it. The course of the boat was in both instances rectilinear.

Perfect Cookery.

"Food made with **Cleveland's Baking Powder** keeps moist and fresh, and in this respect it is **superior to any powder I know.**"

Sarah L. Rorer

Principal Philadelphia Cooking School.

25 CTS PISO'S CURE FOR CURES WHERE ALL ELSE FAILS. Best Cough Syrup. Tastes good. Use in time. Sold by druggists. CONSUMPTION 25 CTS



A HIGH-GRADE PIANO

AT A VERY MODERATE PRICE.

NEW DESIGNS. FANCY WOODS.

Terms Easy. + Monthly Instalments.

TWO, THREE AND FOUR PEDALS.

Catalogues, Prices, Terms, Etc., sent to any address.

EVERY PIANO WARRANTED 5 YEARS.

(Mention this Paper.)

THE ORIGINAL AND GENUINE (WORCESTERSHIRE SAUCE).



LEA & PERRINS' SAUCE

In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—

Lea & Perrins

Beware of Imitations; see that you get Lea & Perrins'

For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS, NEW YORK.

THE N. Y. HAY EXCHANGE BULLETIN.

OFFICIAL REPORT OF THE HAY AND STRAW MARKET AT NEW YORK.

COMMISSION SALESMEN.

NOTICE.

These names are arranged alphabetically.

WM. AFFLECK & CO.,
Commission Merchants in
HAY AND STRAW,
Office No. 5,
N. Y. Hay Exchange Building.

J. ALSDORF,
Commission Dealer in
HAY AND STRAW,
33d Street and 11th Ave.,
NEW YORK.

E. A. DECKER. F. W. TOMPKINS.
DECKER & TOMPKINS,
Commission Merchants in
HAY, STRAW, GRAIN,
Office: 16 New York Hay Exchange Building.

L. S. DILLENBACK. T. O. PECK.
DILLENBACK & PECK,
MAIN OFFICE:
Room 0, N. Y. HAY EXCHANGE, N. Y. City.
STOREHOUSE AND BRANCH OFFICE:
101, 103 and 105 North 5th St.,
and 152 and 154 Berry St.,
Palmer's Dock. Brooklyn, E. D.

EDWIN B. DUSENBERRY,
COMMISSION MERCHANT,
And Wholesale Dealer in
HAY, STRAW AND GRAIN.
No. 1, N. Y. Hay Exchange, New York.

THOS. FONDA & CO.,
Commission Merchants
And Dealers in Hay, Straw, Grain and Country Produce,
13 & 14 N. Y. Hay Exchange Building.

N. A. FULLER,
COMMISSION MERCHANT IN
HAY AND STRAW,
33d Street and 11th Ave.,
NEW YORK.

J. H. Hubbel. Oscar Kent.
HUBBEL & KENT,
HAY AND STRAW
COMMISSION MERCHANTS,
New York Hay Exchange Building.
Personal attention guaranteed all consignments. Correspondence solicited.

THEO. P. HUFFMAN & CO.,
COMMISSION MERCHANTS
In Hay, Straw, Grain, Feed, &c.,
648 & 650 West 34th Street,
Bet. 11th & 12th Aves., N. Y.

The N. Y. Hay Exchange is located at 601 W. 33d St., corner 11th Avenue.

Only the cards of members of the N. Y. Hay Exchange appear on this page.

RULES FOR GRADING HAY AND STRAW

As Adopted by the N. Y. Hay Exchange.

CHOICE OR PRIME HAY—Shall be pure timothy, properly cured, bright, natural color, sound and well baled. No. 1—Shall be timothy, not more than one-eighth (⅛) mixed with "red top" properly cured, bright natural color, sound and well baled. No. 2—Shall be timothy, not more than one-quarter (¼) mixed with red top and blue grass, properly cured, good color, sound and well baled. No. 3—Shall include all timothy not good enough for No. 2, proportionately mixed with blue grass, red top, and clover, sound and well baled. SHIPPING—Shall include all hay not good enough for other grades, and may be natural meadow, free from wild or bog grass, and must not contain over one-third (⅓) clover, sound and well baled. CLOVER MIXED—Shall include all hay containing not over two-third (⅔) clover, and one-third (⅓) timothy, properly cured, sound, and well baled. CLOVER—Shall be medium grown, properly cured, good color, sound, and well baled. NO GRADE OR REJECTED HAY—Shall include all hay badly cured, musty, stained, or in any way unsound.

No. 1. RYE STRAW—Shall be clean, bright, long Rye, in bundles, sound, well and securely baled. No. 2—Shall be long Rye, in bundles, sound, well and securely baled. SHORT RYE—Shall be clean, not bundled, sound, well and securely baled. OAT STRAW—Shall be clean, bright, sound, well and securely baled.

In the New York market bale-wood is weighed in without tare. In all other markets it is deducted.

These quotations for choice, No. 1 and No. 2 hay are for large bales. 5c. per cwt. less when in perpetual press bales.

The New York quotations are per cwt. At other points, per ton.

NEW YORK, April 13, 1891.

The following are the market prices to-day at New York.

	Large Bales.	Small Bales.
Fancy Hay	60c @ 70	60 @
No. 1	55 @ 60	55 @
No. 2	50 @	
No. 3 and Shipping	45 @	
Clover Mixed	50 @ 55	
Clover	45 @	
Long Rye Straw	80 @ 85	
No. 2 "		
Oat Straw	35 @ 40	
Wheat Straw	35 @ 40	

Receipts week ending April 11, as follows:

Via N. Y. Central	186 cars.
" West Shore	135 "
Other roads by Lighter, 34th Street	85 "
Total	406 cars.

Since our last issue the market has been steady at prices then quoted. The stock on hand is not large, and we do not look for any change during this week.

H. B. Jenkins. F. S. Williams.
JENKINS & WILLIAMS.
COMMISSION MERCHANTS IN
HAY, STRAW AND GRAIN,
HAY EXCHANGE.

JOHN KERWIN & SON,
DIRECT RECEIVERS OF
HAY, GRAIN and GENERAL PRODUCE
DEPOT AND STOREHOUSES,
Palmer's Dock, Nos. 97 & 99 North Fifth Street,
BROOKLYN, N. Y.
SHIPPING ADDRESS, PALMER'S DOCK, BROOKLYN, N. Y.
West Shore R. R., N. Y. C. & H. R. R. R., N. Y. L. E. & W. R. R., Pennsylvania R. R., D. L. & W. R. R., Lehigh Valley R. R., and connections.

W. J. OVEROCKER. PERRY HATCH.
OVEROCKER & HATCH,
Commission Merchants in
HAY, STRAW AND GRAIN
33d Street & 11th Avenue, New York.
References: West Side Bank, New York City; Exchange Bank, Holly, N. Y.

Gilbert Plowman, NEW YORK. Spencer Billington, FORT HUNTER, N. Y.
PLOWMAN & BILLINGTON
COMMISSION MERCHANTS,
HAY, STRAW, GRAIN, &c.
No. 15 N. Y. Hay Exchange,
33d St. & 11th Ave., NEW YORK.

JAMES ROZELL & SON,
Commission Merchants and Wholesale Dealers in
HAY, STRAW, GRAIN AND COUNTRY PRODUCE.
N. Y. Hay Exchange, New York.

SKINNER, BLOOM & CO.,
Successors to Rogers, Skinner & Co.,
COMMISSION MERCHANTS
And Dealers in
Grain, Flour, Hay, Feed, Meal, &c.,
74 CORTLANDT STREET, - NEW YORK.
Barge GYPSIE, Foot Bridge St., Brooklyn.

H. SLINGERLAND,
Barges MERCHANT and HARVEST QUEEN
Foot of West 11th Street,
HAY AND STRAW.
Also, 33d and 35th Streets, and all Railroad terminals. Special facilities for lighterage free goods.

CHARLES F. SWAN,
Commission Merchant in
HAY, STRAW & GRAIN,
At all the Railroad Terminals in New York, Brooklyn, Jersey City, &c.
MAIN OFFICE,
108 BROAD ST., NEW YORK.

TITUS, WELLS & WILLETS,
Commission Merchants and Dealers in
HAY AND STRAW,
133 Roosevelt St.,
NEW YORK.

G. E. Van Vorst. James M. Hillery.
VAN VORST & CO.,
COMMISSION MERCHANTS,
HAY, STRAW AND GRAIN
N. Y. Hay Exchange, 33d St., & 11th Ave.
562 & 564 West 34th St., NEW YORK.

NOTICE.

These names are arranged alphabetically.

HOSMER, CRAMPTON & HAMMOND,

NO. 43 COMMERCIAL STREET,

BOSTON.

COMMISSION MERCHANTS,

HAY, STRAW, FLOUR & GRAIN.

E. B. HOSMER, G. W. CRAMPTON, BENJAMIN HAMMOND, A. L. ROBINSON.

BOSTON HAY AND STRAW MARKET.

Hay, choice to fancy, in large bales	$13.00 to	$14.50
Hay, choice to fancy, perpetual pressed bales	12.50 to	13.00
Hay, fair to good	11.00 to	12.00
Hay, poor to ordinary	9.00 to	11.00
Hay, Clover and Clover mixed	10.00 to	11.00
Hay, swale	8.00 to	8.50
Straw, Rye, good to prime	17.00 to	
Straw, Oat	8.00 to	

BOSTON, April 11th, 1891.

Receipts for the week are 279 cars of Hay and 10 cars of Straw; corresponding week last year, 185 cars of Hay and 19 cars of Straw. The receipts of hay continue liberal. There are still considerable stocks of hay in the depots, and on the tracks of the various railroads unsold. We quote the market steady at quotations with a fair demand. Market is quiet for straw with only a slack demand.

H. F. WILSON,
WIRE BALE TIES,
458 WEST 38th STREET, New York.

THURSTON'S IVORY PEARL TOOTH POWDER
WILL KEEP THE TEETH IN PERFECT CONDITION AND THE GUMS HEALTHY.
Price 25 & 50 Cents PER BOTTLE.

HAMMOND'S
CELEBRATED
Calumet Oleomargarine

Strictly pure, cheap and healthful.
Ask your grocer for it.
Put up in packages of all sizes, also prints and rolls.

C. H. HAMMOND CO.,
607 to 615 THE ROOKERY,
CHICAGO.

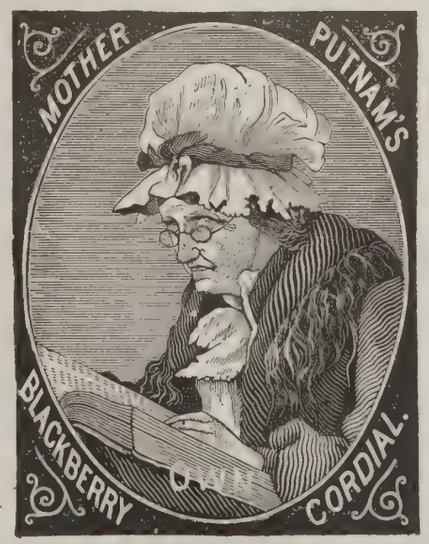
Also offices at Boston, South Omaha, Neb., and Hammond, Ind.

We can save you Fifty Dollars when you Build. See



A complete set of Plans to build from, simply state about price of dwelling desired, 25 cts. in stamps. Our book "Beautiful Homes." 25 cts. Our monthly book "The National Builder," 25 cts. Address
The National Builder, Adams Exp. Bldg., Chicago, Ill.

NATURAL MINERAL PURGATIVE WATER.
From the Springs of
VILLACABRAS.
Prescribed by the Highest Medical Authorities.
Stronger effects than any other under smaller volume. No smell—no repulsive taste—no after-constipation—no gripes. As a daily laxative it can be taken either pure or mixed with milk, tea or broth.
Sold by all Good Druggists.



C-U-R-E-S
DIARRHŒA, DYSENTERY,
MALARIA,
all ailments of the bowels. Is an anti-dyspeptic, and a **DELICIOUS INVIGORATIVE.** Leading Physicians prescribe it for **ADULTS AND CHILDREN.** *FOR SALE* by Druggists and dealers.
RHEINSTROM BROS., DISTILLERS OF FINE LIQUEURS,
54, 56, 58, 60, 62 E. 3rd STREET, CINCINNATI, O.

HARTSHORN'S SELF-ACTING SHADE ROLLERS
NOTICE SCRIPT NAME OF *Stewart Hartshorn* ON LABEL, AND GET THE GENUINE
HARTSHORN

GOLD MEDAL, PARIS, 1878.
W. BAKER & Co.'s
Breakfast Cocoa



from which the excess of oil has been removed,
Is Absolutely Pure and it is Soluble.
No Chemicals
are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.
Sold by Grocers everywhere.
W. BAKER & CO., DORCHESTER, MASS.

THE GREAT AMERICAN TEA COMPANY

LADIES

GET UP ORDERS.
Entire New Departure.
A HANDSOME PRESENT TO EVERY SUBSCRIBER.

THE GREATEST INDUCEMENTS EVER KNOWN TO INTRODUCE OUR NEW GOODS.

If you enjoy a cup of **Delicious Tea** send in your orders. 3½ lbs. Fine Tea by mail on receipt of $2 and this "ad". Beautiful premiums given away with $5 orders and upwards. The **most extraordinary bargains** ever offered, during the next thirty days. China Tea Sets and Lamps with $10, $15 and $20 orders to introduce our excellent **New Crop Teas.** Formosa and Amoy, Oolong, Congou, English Breakfast, Japan, Imperial, Young Hyson, Gunpowder, Sun Sun Chop and Mixed. Good mixed teas 20c. per lb. Headquarters in United States for Fine Teas. One pound of our tea will go farther than three pounds of trash. Thirty years' national reputation for selling **Pure Goods Only.**

THE GREAT AMERICAN TEA COMPANY,
P. O. BOX 289. 31 and 33 Vesey Street, New York.

PUBLICATIONS OF THE

ANALYST PUBLISHING CO.

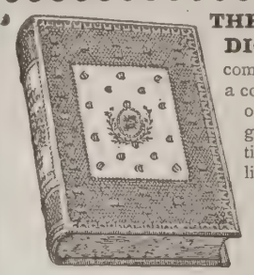
THE AMERICAN ANALYST.
Weekly. Every Thursday. $1 per year.

THE ROOFER, TINNER AND SHEET-IRON WORKER.
Monthly. 15th each month, $1 per year.

THE LEATHER MANUFACTURER.
Monthly. 1st each month. $3 per year.

Reliable agents and representatives wanted everywhere on liberal terms. Address

ANALYST PUBLISHING CO.
19 PARK PLACE, NEW YORK.



THE CENTURY DICTIONARY comes nearer to being a complete catalogue of the English language than any dictionary ever published. But it is not merely a dictionary: it is an encyclopedia of common things as well. It has been ten years in preparation. The leading scholars of the country have contributed to its pages. It is the latest dictionary and it ought to be, and is, the best.

A large descriptive pamphlet containing full-size sample pages, etc., will be mailed to any one sending five 2-cent stamps to
THE CENTURY CO., 33 East 17th St., New York.

A LARGE AND VALUABLE

Cook Book Free



We are enabled to offer our readers a most attractive combination, by which all may obtain a copy of the "Modern Cook Book" absolutely free. This handsome and valuable Cook Book has

320 Pages, Over 1,200 Recipes and Hundreds of Illustrations.

The recipes are the choicest selections from 20,000 that were received from practical housewives living in all parts of the United States, to which were added hundreds of the newest, best and most practical recipes of this progressive age, all of it set in new and large type, and the whole book handsomely illustrated.

IT HAS A BEAUTIFUL, ILLUMINATED COVER.

It is an elegant and admirably arranged volume of recipes for practical, everyday use. Among its points of excellence are the following:

Practical Suggestions to Young Housekeepers, Necessary Kitchen Utensils, Suggestions and Recipes for Soups, Fish, Poultry, Game, Meats, Salads, Sauces, Catsups and Relishes, Breakfast and Tea Dishes, Vegetables, Bread, Biscuit, Pies, Puddings, Cakes, Custards, Desserts, Cookies, Fritters, etc. Also for Preserves, Candies and Beverages; Cookery for the Sick, Bills of Fare for Family Dinners, Holiday Dinners, etc. A Table of Weights and Measures; Chapters on the Various Departments of Household Management and Work.

IT WOULD BE CHEAP AT $1,

As it is the Latest, Best and Most Practical Cook Book Published, More Nearly Meeting the Wants of American Homes than any other.

Any person accepting our offer will receive this paper one year, and also that charming home journal, the Ladies Home Companion, one year, together with the Cook Book, all mailed, postpaid, for less than the regular price of the two papers alone.

The Cook Book is offered absolutely free to induce thousands of our readers to become acquainted with the Ladies Home Companion, the publishers looking to the future for their profit, as they believe you will always want the Ladies Home Companion if you try it one year. Do not lose this opportunity to get the newest and best Cook Book free.

THE LADIES HOME COMPANION is a large and popular 16-page journal, published **twice a month**, and gives information about those things which ladies particularly wish to know, and is mostly written by ladies. **Original or Selected Stories** by eminent authors are found in each issue. A special feature is the variety of departments, each of which is conducted by a special editor. It gives the latest **Fashions**, arranged for practical use; timely hints to **Housekeepers**; cheering and helpful talks with **Mothers**; valuable information for lovers of **Flowers**; a pretty and pleasant page for pretty and pleasant children. All handsomely illustrated. It is not an ultra fashion paper, but a journal for the home circle, full of common-sense ideas and suggestions for home happiness and comfort.

OUR OFFER Send us $1.00 and you will receive **The American Analyst** one year, and also the **Ladies Home Companion** one year (24 numbers). And every one accepting this offer will also receive the above Cook Book, postpaid.

This offer is extended to **all** our subscribers. Subscribers whose subscriptions have not expired, or those recently renewed, are privileged to accept this GREAT OFFER, in which case their term of subscription will be extended one year.

Address THE AMERICAN ANALYST, 19 Park Place, New York.

"BILLET"

are

Carefully Selected

French Sardines,

Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,
HOWARD STREET, BOSTON, MASS.

To Subscribers, Readers and Advertisers.

SUBSCRIBERS' attention is called to the great variety of interesting and instructive subjects treated in this number. We respectfully ask the co-operation of our subscribers in extending our Subscription list, which will enable us still further to increase the value of the AMERICAN ANALYST to them.

The CASUAL READER is specially requested to examine our liberal premium offer.

ADVERTISERS who do not know of this Journal already, are respectfully referred to article headed "A Business Benefit."

ALL are kindly requested to peruse this number thoroughly.

The AMERICAN ANALYST can be had at any news stand in the United States. Any newsdealer will take orders for it, the American News Company being our wholesale agents. All postmasters will receive subscriptions.

Tabasco Pepper Sauce

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

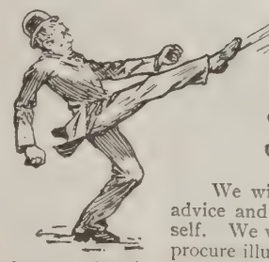
The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced, by connoisseurs, to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY,

NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

Don't kick



because your business is bad, but advertise If you don't know how to, write to us and we will tell you.

We will prepare your advertisement or give you advice and assistance to aid you in preparing it yourself. We will have the advertisement set in type and procure illustrations if any are needed. When a satisfactory advertisement has been produced we will furnish proofs and an electrotyped pattern to be used in duplicating the advertisement if the display or illustration make an electrotype desirable.

Address GEO. P. ROWELL & CO.,
Newspaper Advertising Bureau,
10 Spruce St., N. Y.

NATRONA BI-CARBONATE OF SODA.

(ABSOLUTELY PURE.)

The nature of the raw material from which NATRONA BI-CARBONATE OF SODA is made—viz., kryolith, a mineral containing *pure sodium*—insures a purity and uniformity of product which cannot be obtained from any other known material. In making BI-CARB. SODA from any other raw material, the use of sulphuric acid is a necessity, but none is used in any part of the process of making NATRONA BI-CARB.; hence its entire freedom from the slightest trace of arsenic, which is always present in ordinary soda. Its absolute purity and entire freedom from all traces of *sulphate of soda*, common salt and other impurities, render NATRONA BI-CARB. NEARLY TASTELESS, and being bolted through the finest bolting-cloth, insures the finest stage of division.

To these indisputable facts the attention of CONSUMERS of soda is specially called. They are IMPORTANT, and should influence both those who use and those who sell soda, to buy and sell NONE BUT THE BEST.

The NATRONA BI-CARB. Soda is kept in stock by almost every wholesale druggist and grocer throughout the United States, of whom it may be ordered.

Natrona Bi-Carb. Soda is unequaled by any other brand of English or American Manufacture.

PENNA. SALT MANUFACTURING CO.,

NATRONA CHEMICAL WORKS. PHILADELPHIA, PA.



ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,
184 Greenwich St., N.Y.

INSTRUCTIONS TO SUBSCRIBERS.

The **Names of all Subscribers** are registered as soon as received, and paper is always promptly forwarded.

Postage.—The postage to all parts of the United States and Canada is paid by the publisher.

Remittances of small sums may be made with comparative safety in ordinary letters. Sums of one dollar or more must be sent by registered letter or P. O. money order, otherwise we cannot be responsible for same. Silver must not be sent in a letter.

Postage Stamps will be received for the fractional part of a dollar, and in any amount when it is impossible for patrons to procure bills, but you must send one or two-cent stamps only.

SUBSCRIPTIONS.—The AMERICAN ANALYST will be sent one year to any subscriber for ONE DOLLAR. New subscriptions can begin at any time.

We Stop the Paper at the expiration of the time paid for unless a renewal of subscription is received. Those whose subscriptions have expired must not expect to continue to receive the paper unless they send the money to pay for it.

Change of Address.—Subscribers wishing their addresses changed must invariably give their former as well as new address.

Missing Numbers.—It occasionally happens that numbers of our paper sent to subscribers are lost or stolen in the mails. In case you do not receive any number when due, write us a postal card and we will cheerfully forward a duplicate of the missing number.

Most Important of All.—In every letter that you write us, never fail to give your full address, plainly written—name, post-office, County and State.

Address all letters to

THE ANALYST PUBLISHING CO.,
19 Park Place, New York.

Vigoral

FOR

STRENGTH, NOURISHMENT AND REFRESHMENT.

PREPARED BY

ARMOUR & CO.,

CHICAGO,

From their celebrated EXTRACT OF BEEF, further strengthened in muscle-forming constituents by the addition of pure beef in powdered form.

Vigoral is seasoned ready for use and makes a delicious hot drink for cold weather.

SWIFT'S

CHOICE

Chicago Dressed Beef

AND

MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,

UNION STOCK YARDS,

CHICAGO, ILLS.

We shall be glad to supply our readers with any periodical published at club rates.

Send us a postal naming periodical and we will quote you prices.

ANALYST PUBLISHING CO.,
19 Park Place, New York.

GLENN'S
SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,

C. N. CRITTENTON,
115 FULTON STREET,
NEW YORK.

Be progressive and keep abreast of the times. Avoid dyspepsia by using **Lard Compound** and **Cottolene,** a substitute for lard.

The highest medical authorities pronounce them healthful; and expert cooks commend them.

Our **Clairette** brand of cotton oil soap is the purest and best laundry soap in the market; as pleasant to the hands as genuine castile.

N. K. FAIRBANK & CO.,
CHICAGO AND ST. LOUIS.

The Standard of Excellence.

KINGSFORD'S

OSWEGO

Pure and Silver Gloss



STARCH

KINGSFORD'S
OSWEGO CORN STARCH
FOR
Puddings, Custards, Blanc-Mange, Etc.
THE PERFECTION OF QUALITY.
WILL PLEASE YOU EVERY TIME.
Always ask your Grocer for these goods.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 17. NEW YORK, THURSDAY, APRIL 23, 1891. WHOLE No. 217

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - $1 per year.
Single Copies, - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.

Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.

Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,

H. LASSING, M. D., } *Editors.*
T. P. McELRATH, }

No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

Adulterated Food 196
Art of Wood Engraving 195
Bellamy's Vision 197
Chewing Gum 197
Curious Patents 196
Dining and Wining 194
Domestic Dietetics 197
Editorials 193
Electrical Lenses; Stamp Collectors; Meat and Microscopes; A New Association.
Genesis of the Elements 195
Hay Market Official Bulletin 200
Historic Fires 198
Names for Definition 199

ELECTRICAL LENSES.

There is no end, and in fact no determinable limit, to the conjectures regarding the future possibilities of electricity. A writer in the *Electrical Review* believes that one of the "most glorious" of these possibilities is in the field of optical instruments. "What is a telescope?" he asks, proceeding then to answer "nothing but a combination of lenses or mirrors, the primary function of which is to bend or reflect a ray of light. But has it not been shown that an electrical field will bend a ray of light, and that a ray of light reflected from the polished pole of a magnet is peculiarly twisted? The part which electricity has hitherto played in astronomical science has been limited to a few technical applications principally associated with signaling and the making of chronographic records, but it is the destiny of this infant giant to work greater changes in the study of the heavens than has ever been dreamed of by man. Why is it so difficult and expensive to construct an immense telescope? From the time of Galileo to that of Clark steady work has been done, and each step has given us a larger object glass. The pupil of the eye is one-fifth of an inch in diameter, and can grasp but a limited amount of light. A 25 inch object glass will enable the eye to take in over 15,000 times more light, and with such a glass the moon can be seen as though it were only eighty miles away, but if the size of the object glass could be further increased the moon would be brought considerably nearer. To make a large object glass is the difficulty, and it is only after years of patient work of the most skilled men on earth and after repeated attempts that one can be produced which is accurate. Slight differences of specific gravity, changes of structure due to jarring, strains resulting from unequal pressure and changes of temperature, are all capable of ruining the work. But why not replace the glass, which is only a medium transmitting light at a different velocity from air, by a properly constructed electric field? It is conceivable that an electric field fifty feet in diameter could be arranged. Just what the nature of this field should be, with our present knowledge, we cannot say; but some day it will be known, and then the secrets of other planets will be ours.

STAMP COLLECTORS.

The collecting of postage stamps is generally regarded as one of the passing "fads" that, after having enjoyed a wide popularity some years ago, has gradually lapsed into "innocuous desuetude." This, however, is not by any means the case. Expert collectors are still industriously filling their books, and those who understand the trick of it frequently realize considerable sums for their collections. We know one instance of a gentleman who last autumn left a boxful of postage stamps, the gleanings of several years' intelligent effort in that line, with a New York firm to dispose of. The brokers estimated the worth of the collection at close upon four thousand dollars, and cheerfully advanced six hundred dollars upon receipt of the consignment. Many stamps possess, through their scarcity or other causes, a value immensely beyond that printed on their faces; and the handling of this particular kind of merchandise, although restricted to a few firms, has grown into a trade of considerable dimensions. Collectors who have not studied the history of stamps are often surprised at the number of different issues that are used by comparatively insignificant governments. It is difficult and expensive to secure a complete collection of stamps of the Central American republics. Brazil and Peru have all kinds of issues, while even the Spanish stamps used to be continually changed. This was done entirely in the interest of stamp collectors. There is a firm in America that used to supply stamps to these governments free of cost, on condition that the issue should be changed at least twice a year, and that all unsold stamps should be returned. The supply could thus be controlled, and a fancy price put on the obsolete issues. The extent of the traffic in rare stamps can be appreciated from the fact that these speculators made thousands of dollars annually after paying expenses.

MEAT AND MICROSCOPES.

The details of the new meat inspection law were announced at the Produce Exchange in this city on April 10, and according to the *Commercial Bulletin* some of its features provoked considerable merriment. The announcement, we are informed, was as follows: "It is estimated that the new meat inspection law will require 130 to 150 men with microscopes in Armour's packing houses alone. This gives an idea of the magnitude of the undertaking. Smaller houses cannot be handled as economically as the large ones. The Inspection Law will be put in force as fast as men and means and microscopes can be provided. The Secretary of Agriculture will not be able to put it into general operation this year, as Congress failed to make the necessary appropriation, and is limited to such general funds as they can spare. He will only apply the law in such houses as ask for it this year, and gradually feel his way, as there are many difficulties to overcome." This statement was read to a group of the trade. The comments that followed were decidedly humorous. One prominent broker declared that he would quit his business and go into microscopes; another, that the microscope manufacturers must have been behind this meat inspection law when it passed Congress; still another, that the microscopes must first be tested by an investigation of the heads of the Interior Department at Washington before they would be accepted. A leading exporter said that the law would, no doubt, lead to new discoveries in Bacteriological Science, and advance the market for microbes as well as for microscopes.

A NEW ASSOCIATION.

The Ladies' National Health Protective Association has been incorporated at Washington, D. C. The directors for the first year are Clara Borton, Jane H. Spofford, Alice C. Fletcher, and Emily L. Sherwood, of the District of Columbia; Margaret W. Ravenhille, Fannie J. Helmuth, and M. Louise Thomas, of New York. The objects of the association are to protect the health of the people of the United States by taking such action from time to time as may secure the enforcement of existing sanitary laws and regulations by inviting the attention of the proper authorities to any violation thereof, and to procure the amendments of such laws and regulations when they shall be found inefficient for the prevention of acts injurious to the public health; and co-operate with the health officials of the United States and the various States and cities.

DINING AND WINING.

HOW WINES SHOULD BE SERVED ON THE DINNER TABLE.

It is optional with the host and hostess whether wine shall or shall not appear on the dinner table. Whether it is good for it to be there or not is another question. By the word "wine," I mean the fermented grape juice and not distilled spirits. Liquor or spirits designate, as a class, the alcoholic drinks, while wine is commonly applied to the non-alcoholic ones. At a private house one is more apt not only to get good wines, but wines properly served. More lies in this last fact than most persons know. The heavier wines must be taken from the cool wine cellar two or three days before they are needed, and placed in a warmer room; then several hours before they are to be drank they must be most carefully decanted, leaving behind whatever the wine has thrown off while ripening in the way of sediment. The presence of this sediment proves the wine's age, and to fool the credulous public, what is necessary for making it is often added when bottling is done. It is impossible for a caterer to keep his wines in prime condition for serving on call. If they are taken from the cellar to the proper heat for drinking and returned to the cellar again they will be ruined by the shifting and by the changes of temperature. The wines considered as table wines are port, Madeira, sherry, sauterne, red French wine or Burgundy, champagne, Bordeaux, (claret,) and those from the Rhine. The list is given according to the amount of alcohol contained in each, beginning with port. Liqueurs are stronger than red wines, but, strictly speaking, they are not table wines. Fashion dictates the kind of wines to be used, and custom the manner of serving. The routine of wines at a dinner is: Chablis or sauterne with the oysters, dry white wines with the soup and fish; then, as the courses follow, sherry, claret, champagne, Burgundy, and, last of all, a sweet wine or liqueur with the dessert and for the *pousse-cafe*. It is often said that red wines should precede the white ones, but it is matter of taste which should be introduced first. It is not at all necessary that all of the wines mentioned should appear on a table; at a private house three wines are sufficient, or, in reality, two are enough. The mixing of wines is a great mistake; the process upsets the equilibrium and the digestion quicker than anything else. A good dry white wine or sherry for the first two courses, claret or Burgundy next, and a champagne for a finish is enough for a dinner party. Or a red wine followed by a champagne, if both are excellent, is much to be preferred to a variety of indifferent wines. The wines of a private cellar give more tone to a dinner than any dish or number of dishes, and it is sufficient distinction that you should be known for one kind of wine alone. The proper way for buying all wines but champagnes is in the cask; you run a better chance of getting a purer article, although almost all wines but the lightest are adulterated for exportation. Alas, that Americans should know it, the best of all foreign wines are kept at home for the consumption of those who make them. Added to this we are not supposed to know a good thing when we get it, hence nearly all of the wine that comes to our market is doctored. It is not generally known that red and white wine are made from the same grape. For the white wine the juice alone is fermented: for the red wine the pulp and skin are pressed, and what comes from them by the process is added to the juice before fermentation begins. The coloring matter is in the skin, and the darker the skin the deeper the color of the wine. Colored wines are astringent and strengthening. Under cover of this coloring foreign matter enters many red wines. A singular fact is that as some wines grow older they lose color, while others darken. After port is bottled it grows lighter. A certain amount of change goes on by which the wine throws off whatever is coarse in its nature, gaining by the process an increased delicacy in flavor and aroma. Clarets, on the contrary, grow darker, and what is often sold as "old" in bottles has had some black wine added. All wines in which the fermentation is arrested, or in which the sugar is exhausted before the ferment is, do not improve with time. With them whenever a favorable opportunity or condition occurs, by the admission of air or a change in temperature, an acid fermentation begins and the alcohol of the wine is turned into vinegar. This process can be often arrested by the addition of sugar—possible to the wine maker or merchant—or changing the wine to a cooler temperature. Through inattention good wine may go to its own destruction. After color wines are again divided into two classes, light and strong, these are subdivided into "sweet" and "dry." All of the French wines are light—sherry, Madeira, port are heavy or strong wines. If sugar remains after fermentation is completed, and the wine is left so it is known as sweet wine. When the sugar is exhausted while the change is going on, an acid flavor prevails and the wine is known as "dry." The "bouquet" of a wine is a volatile, odoriferous constituent; it is at once a perfume and a flavor; it is refined and improved by age; it is this that gives value to the liquid. As white wines come with the first courses they should be considered first. Sauternes are the white Bordeaux wines. The grapes for making them are grown on the hilly banks to the left of the Garonne. On the right of river are the white wines known as Graves. The name sauterne comes from the French word *sauter*, to jump or ascend; the hills on which the fruit grows give the wine its name. The white Burgundy wine most often drank is Chablis; it is far inferior to the best white wine grown on the Garonne. Of the French wines Chateau Yquem and Latour Blanche are rivals and stand first in favor. The Rhenish wines are white wines that should be more often seen at the table. The peculiar taste of these wines does not lead to their popularity; they require an educated palate and an appreciative one for their dry, aromatic taste. These wines are often ordered by the physician, being great blood purifiers. They are drier than the French wines and improve more than all other wines with age. The German cellars have wine in casks two centuries old. The most celebrated vintages are those of the earlier part of this century. It is needless to say that samples of such vintages seldom appear on our tables. A fair Hockheimer, Johannisberg, or Rudesheimer of recent date is all we can hope for. These wines can be decanted or not as one wishes, but the temperature at which they should be drank is 40 deg. Fahrenheit. If sherry replaces a white wine, or is served after it, it must have the same temperature and must be decanted. The red Bordeaux wines come next. They are known here under the name of claret—a term unknown to the producers or in the market. It is a corruption of the word *clairet*, applied in France to all rose-colored wines. These wines are divided into classes by the districts in which the grapes are grown, and again divided by the vineyards, whose names they generally bear. We all know the finest claret, but few of us a good claret. Those of the first *crus*, Chateau Lafite, Chateau Latour, Chateau Margaux, are the best grown on the native shores and the ones most often met with at our table. Pontet-Canet is the next favorite; it belongs to the fifth *crus*; the virtues of the intermediate clarets are almost unknown. All the excellent wines after the first *crus* are kept in France, but we are spared the peasant or *bourgeois* wines exported under the head of *vins ordinaires*. These we receive warmly, and pay for highly in our ignorance. Although we are told not to "look on the wine when it is red," claret surely answers the scriptural definition of "the wine that maketh the heart glad." The wine has the taste of flowers as well as that of fruits; its "bouquet" suggests violets, mignonettes, the raspberry and the grape. It cheers the heart, pleases the palate, imparts a gentle heat to the stomach, and does not go quickly to the head. Fourteen ounces, or nearly a pint, an authority says, can be easily drank by the most delicate without having any intoxicating effect. Good claret should be "sound, fruity, and soft as satin." It is the most useful and the most healthy of all wines; it assists digestion, and being free from sugar leaves no after-taste nor headache. If Burgundy is a kingly wine, claret is the wine of the gentleman and the connoisseur. Claret should always be decanted and served at a temperature of 60 or 80 deg. Fahrenheit. The decanter into which it is poured should be warmed before the wine is poured in, which should be done several hours before dinner is served. Because they can be decanted the *vins ordinaires* can often masquerade as something better. If you are known for your claret—and you can be known for nothing better—it is taken for granted you have wine from the first *crus* or something very good that you, as a connoisseur, have selected. You do not require the label to prove the vintage, as a beautiful hostess, who knew her wines better than her guests, did. "James," she said, reprovingly, to her butler, as he poured the translucent red wine from a bottle free of all label, "you have rubbed the label off!" Burgundy can be substituted for claret or follow it. If both appear at table, the former is poured with the salads. It was supposed to lose its flavor by travel, but now the opinion is held that a trip or two across the sea improves it. The most famous brands are Romanée, Clos Vougeôt, and Chambertin. The last was the beloved of a King and an Emperor, and is the kind most often in our cellars. Burgundies differ greatly in taste, and anybody knowing the wine at all can easily distinguish a Chambertin from all others. They rank higher than the clarets, growth to growth, sell higher, and are well worthy the higher price. Good Burgundy and old burgundy has a sediment—it should therefore be carefully decanted. It should be drank blood-warm, at a higher temperature than any other wine. It is a generous wine that improves with age. Champagne can be brought on before or after the generous red Burgundy. At the average table it is the wine served last. It is the favorite wine of the public; as the public must have it, it often has it pretty bad. The vineyards of Epernay and Rheims produce the most celebrated wines. The sparkling "dry" champagne is the most popular, although the connoisseur and epicure consider the *cremant* or still wine by far the best. New vintages are constantly being introduced, but fashion and the dryness of the wine have more to do with the brand rejoicing as the favorite of the moment than anything else. Its lively and effervescent quality is given to the wine by artificial means; rock candy and fine brandy do the work. Champagne gains nothing by being kept, and its owner often loses much by leakage, etc. It is always served in its own bottle. The flavor of this agreeable beverage is ruined by ice applied externally, or put in the glass. What is known as champagne *frappe* is champagne ruined. Frenchmen drink it at 40 deg. Fahrenheit; wicked Americans drink it at 35 deg. or colder. The delicacy of the "bouquet" is destroyed by the cold. A certain warmth is as necessary to the perfume of wine as it is to that of flowers. Port often comes with cigars instead of a liqueur. It is good for the stomach and good for gout. It comes last, but is often blamed for the effects of "drinks" that have preceded it. It is the most alcoholic of table wines, and it is more often something else than port. The ingenious Portuguese imitate the product of the grape, and a factitious wine results. But, like the old darkey who bought a buzzard for a turkey, and ate it for a turkey, we buy what goes for a port, and drink it for a port. Their neighbors, the Spaniards, understand how to make sherry in the same way. To both of these wines a large amount of brandy is added. It takes the aroma of port fifteen years to overcome the brandy put into a cask, sherry ten years. While the grape-juice is trying to assert itself the wines should be kept in the cask. In a quarter of a century they are ready for the decanter. All wines that can be bought in the cask should be. You will get a better wine that way. The

strong wines can be left in the wood to grow mellow, and the lighter wines can be easily bottled. You will lose a few quarts of wine, and make the bottler and his assistant drunk by this, but in the end you will gain. You should have a different colored sealing-wax each year. In that way you can always keep the run of the different vintages. A series of five colors will do, as very few housekeepers can or do keep more vintages on hand at once. This suggestion is offered in behalf of claret especially. Wine in the cellar must be carefully watched; the fragrant liquid must be looked after seriously. Wine that is corked without sealing or metal caps can be spoiled in a damp cellar. The mould that gathers on the outside of a cork can eat its way in and affect the contents of the bottle. The banishing of wine from a home table should depend on the family finances and not on personal prejudice. All wines contain some alcohol, but it is not for an intoxicating effect that they are drank—at least it should not be so. It is statistically proved that there is less inebriation among the people of wine-producing countries than elsewhere. Where the grape grows there is neither corn nor rye mash. Instead of wine giving or fostering a love or taste for that which gets into the heads or heels—whichever it is—and reduces man to the level of a beast, it has just the opposite effect. In wine there is a great chance of sinning, not in its use but in its quality. The wine you pay most for is generally, but not always, the best. All varieties of wines differ in taste and body, but vintages of one wine are unlike in character. This is due to the temperature when the fruit was growing and fermenting, to the amount of moisture during a vintage, and to the condition of the grapes sent to the press, whether over-ripe, not ripe enough, or otherwise imperfect. Passing "the bottle around the table" is a social phrase that has more friendliness than sense in it. Skill is required to pour wine, and careless handling means destruction. The flower or lees, even of decanted wine, are disturbed by the process, and instead of a clear, ruddy, fragrant liquid, a cloudy, muddy one appears in the glass. If you object to wine on principle, you will do no good by refusing to have your glasses filled. You will not get any credit by refusing. The host or hostess will probably notice your glasses unfilled and call the servant's attention to the fact, thinking you have been overlooked. Then an explanation will have to follow that ought to be embarrassing. If the wine is good it is a pity to waste it—but the best way is to allow your glasses to be filled without a protest. You need not drink the wicked stuff. The indulgence to excess ruins the reputation of many things less good than wine. Many waters are more death-dealing than wines, but you can suit yourself, as Rudyard Kipling says in a poem, "We have drank your water and wine." We can all, if not notional, safely follow St. Paul's advice to the good and youthful Timothy: "Use a little wine for thy stomach's sake."

GENESIS OF THE ELEMENTS.

ELEMENTARY SEED SCATTERING OF CREATIVE FORCE.

It is now generally acknowledged that there are several ranks in the elemental hierarchy, and that besides the well-defined groups of chemical elements, there are underlying sub-groups. To these sub-groups has been given the name of meta-elements. The original genesis of atoms assumes the action of two forms of energy working in time and space—one operating uniformly in accordance with a continuous fall of temperature, and the other having periodic cycles of ebb and swell, and intimately connected with the energy of electricity. The centre of this creative force in its journey through space scattered seeds or sub-atoms that ultimately coalesced into the groupings known as chemical elements. At this genetic stage the new-born particles vibrating in all directions and with all velocities, the faster moving ones would still overtake the laggards, the slower would obstruct the quicker, and we should have groups formed in different parts of space. The constituents of each group whose form of energy governing atomic weight was not in accord with the mean rate of the bulk of the components of that group, would work to the outside and be thrown off to find other groups with which they were more in harmony. In time a condition of stability would be established, and we should have our present series of chemical elements each with a definite atomic weight—definite on account of its being the average weight of an enormous number of sub-atoms or meta-elements, each very near to the mean. The atomic weight of mercury, for instance, is called 200, but the atom of mercury, as we know it, is assumed to be made up of an enormous number of sub-atoms, each of which may vary slightly round the mean number 200 as a centre. We are sometimes asked why, if the elements have been evolved, we never see one of them transformed, or in process of transformation, into another? The question is as futile as the cavil that in the organic world we never see a horse metamorphosed into a cow. Before copper, *e. g.*, can be transmuted into gold it would have to be carried back to a simpler and more primitive state of matter, and then, so to speak, shunted on to the track which leads to gold. This atomic scheme postulates a to and fro motion of a form of energy governing the electrical state of the atom. It is found that those elements generated as they approach the central position are electro-positive, and those on the retreat from this position are electro-negative. Moreover, the degree of positiveness or negativeness depends on the distance of the element from the central line; hence calling the atom in the mean position electrically neutral, those sub-atoms which are on one side of the mean will be charged with positive electricity, and those on the other side of the mean position will be charged with negative electricity, the whole atom being neutral. This is not a mere hypothesis, but may take the rank of a theory. It has been experimentally verified as far as possible with so baffling an enigma. Long-continued research in the laboratory has shown that in matter which has responded to every test of an element, there are minute shades of difference which have admitted of selection and resolution into meta-elements, having exactly the properties required by theory. The earth yttria, which has been of such value in these electrical researches as a test of negatively excited atoms, is of no less interest in chemistry, having been the first body in which the existence of this sub-group of meta-elements was demonstrated.—*London Chemical News.*

ART OF WOOD ENGRAVING.

THE CHINESE CLAIM TO HAVE KNOWN IT 3000 YEARS.

The art of engraving on wood was introduced into Europe from China by merchants trading with that country. The Chinese claim to have known the art a thousand years before the birth of Christ, but though that is probably not true, it is certain that they knew it before any European nation did. Early in the fifteenth century illustrations of the Bible and playing cards were printed from wooden engraved blocks. These two things were in a way the first to be printed in Europe. From printing with blocks to the use of movable type was a natural step. A full-length portrait of St. Christopher, done in 1423, is one of the earliest wood engravings. It is remarkable for the attempts at shading. Another good specimen of early wood engraving is the title page of a Sallust printed in 1481. Sallust is seen dictating to three scribes, one of whom, Joannes Brittannicus, John of Britain, writes with two hands. The printing of playing cards and of Biblical illustrations became so general an industry during the fifteenth century that the Venetian Senate, in order to protect the city's own share of it, forbade the importation of them. At the same time large numbers of block books, printed by the use of engraved wooden blocks, were published. "The Poor Preacher's Bible" is among the best known of these. It contains forty pages printed on one side only. The ink is pale brown, and the transfer from the blocks to the paper was done with a rubber. These books immediately preceded the introduction of printing with type by Guttenberg and Caxton. The text and titles of the illustrations are done in handwriting in the block books There is no indication on them of the date or place of publication, but most of them were made in Holland and Germany. "The Mirror of Human Salvation" is a book in which the illustrations were printed from blocks and the text from movable type. Each process was done separately. The inventors of printing devoted more attention to the printing of Bibles than anything else, and many of them were illustrated. The Cologne Bible, printed, somewhere between 1470 and 1475, contains 109 engravings, which show a strong improvement on any earlier work remaining to us. The borders of the volume are decorated, and the designs often deal with things far removed from the thoughts of the inspired writers. "The Chronicles of Nuremberg," 1491, contains the first example of the process of crosshatching, by which color is produced by lines crossing each other obliquely. The best of the earliest wood engraving was done in Italy, but in the sixteenth century the art took great strides through the example of the great Albert Durer. By the use of strong contrasts in black and white he did away with the need of colorings. He is best known for his four series of Biblical illustrations. The Apocalypse of St. John, the Larger Passion of Our Lord, the Life of the Virgin, and the Smaller Passion of Our Lord. Another series, the Triumph of Maximilian, is famous. The herald is a representative piece of this work. The beast on which the herald is mounted has the hind legs and tail of a lion, the body, wings, claws and neck of an eagle, with a lion's face where the eagle's might be. All is very fantastic, but artistic. Holbein, who flourished a few years after Durer, carried the art still further ahead. His "Dance of Death" and "Figures of the Bible" are among the monuments of the engraving art. After Durer, Holbein, and their pupils had passed away it declined, and at the end of the sixteenth century was in its lowest state. From that time on it did not flourish greatly until the eighteenth century. Then there were some interesting revivals, including the works of Hogarth. To Thomas Bewick, the glorious illustrator of British birds and beasts, is due the creation of the present art of engraving on wood. He began to work at the end of the eighteenth century. Probably the best work is done at the present time by American wood engravers.

ROUGH ON RUM.—Half a teaspoonful of chloride of ammonium in a goblet of water will almost immediately restore the faculties and powers of locomotion to a man who is hopelessly intoxicated. A wine glassful of strong vinegar will have the same effect, and is frequently resorted to by druken soldiers to enable them to return steadily to their barracks.—*Medical Summary.*

STONE-SOLED SHOES.—A German inventor proposes to make boots with stone soles. He mixes with a water-proof glue a suitable quantity of clean quartz sand, which is spread on the thin leather sole employed as a foundation. These quartz soles are said to be very flexible and almost indestructible, while they enable the wearer to walk safely over slippery roads.

GREAT DEPRECIATION.—A London financial authority says that the magnitude of the losses which have been sustained by English investors in Argentine securities may be obtained from the statement that the decline within the past two years in the value of Argentine railway stocks and bonds listed on the London Stock Exchange amounts to $150,000,000. The par value of the securities is $336,359,000, of which a little over $100,000,000 were guaranteed by the Argentine General Government, over $42,500,000 more had the guarantee of the provinces, and nearly $183,750,000 are without guarantee.

CURIOUS PATENTS.

SOME OF THE SINGULAR DEVICES OF INGENIOUS INVENTORS.

The Patent Convention mentioned by the AMERICAN ANALYST, March, opened on April 8. The Patent Office was originally a branch of the State Department, but it was made a part of the Department of the Interior at the time of the organization of that branch of the Government in 1849. For a great many years one of the rules of the Patent Office required that a working model be furnished with every application for a patent on a device. This has been modified so that in most cases it is not necessary to file more than the specifications. Still, many models are filed with the Patent Commissioner, and the accumulation of them is making it more and more necessary every day that the Patent Office should have better quarters. There are about 200,000 models in the office now. The oldest of these is a model of the cloth-shearing machine, on which a patent was granted to S. G. Dorr, of Albany, N. Y., Oct. 20, 1792. It is in good condition and repair, because it was renovated after the fire which destroyed so many models of historical interest and of inestimable value in 1877. There have been two fires in the Patent Office. The first of these took place in 1836, on Christmas Day, and destroyed about 7,000 models. The second fire was far more disastrous. It occurred on Sept. 24, 1877, destroying 87,000 models of patented devices and 27.000 models of devices for which applications for patents were pending. Among the models which suffered in the second fire was that of the cotton gin invented by Eli Whitney in 1794. A duplicate of this model was built, and it stands in the Patent Office to-day. Among the other original models in the Patent Office are Colt's first revolver, patented in 1837; R. M. Hoe's double-cylinder printing press, patented in 1842; Howe's first sewing machine (a queer contrivance run by hand by an oscillating crank); Morse's electric telegraph, the first engine run over the Baltimore and Ohio road (patented by Ross Winans in 1833); the Gatling gun, and the Hotchkiss gun. There are 186 classes of inventions altogether, and these are divided into more than 3,000 subjects. The perpetual motion crank is the most frequent applicant for a patent. All of the devices which have come down from ancient history for the establishment of perpetual motion have been repeated over and over again by the applicants for patents in this modern day. The Commissioner of Patents keeps on hand a publication in two volumes called "Perpetuum Mobile," an ancient chronicle of devices for establishing perpetual motion. They are more than 2,000 years old, and every idea presented to the Patent Office to-day for a perpetual motion machine can be shown to have originated with the ancients. The applicants for these patents are not among the least known of the people who file applications with the Patent Commissioner. The roll of claimants contains the name of Harriet Hosmer, the sculptress and other well-known people. The experience of the Patent office of this country is not unique. The French Academy was overrun with applications for perpetual motion patents in the last century, as were the like bureaus of the other Governments of Europe, and finally, the French Government, in 1775, gave notice that no more applications of this kind would be considered. The Commissioner of Patents of the Interior Department of the United States disposes of the perpetual motion cranks more diplomatically, but just as expeditiously. To every applicant a stereotyped reply is sent. It requests the inventor to file a working model of the machine. This silences the applicant, for, as perpetual motion is impossible, no working model of a perpetual motion machine will ever be made. Some models are filed, though, and they are among the curiosities of the Patent Office. The most common device is an arrangement of shifting weights, one side proponderating over the other constantly. Another favorite is a triangle formed of a chain, to one side of which a series of automatic hooks continually attach itself, causing that side to be heavier than the other. Abraham Lincoln was an inventor. In 1849 he patented a device for lifting boats over shoals. There is no record of its having been put to any practical use. Dr. Mary Walker patented a device for teaching children to read and spell by the use of rebuses and conundrums. Senator Burnside patented a gun in 1850 which he endeavored to have the Government adopt at the time Jefferson Davis was Secretary of War; but his efforts only resulted in creating a breach between him and Davis which has become historical. Devices with well-known names attached to them attract attention for this reason; but they are not nearly so interesting as the patents which are taken out by cranks. These may not illustrate the progress of the United States in invention so well as the electrical devices of Edison, but they are more interesting to the visitor who examines the show in the glass cases ranged along the aisles of the top floor of the Interior Department building. Among the most amusing of these are the patents on weapons of a substantial and unique character. The connon-plough is one of the best of these. The plough beam is hollow, and it is to be used as the barrel of a small cannon, loaded with a cannon ball of moderate size, and turned upon the invader of the tranquility of the fields with deadly effect. Instead of beating the ploughshare into a sword this inventor proposed to twist the plough handle into a cannon. Another inventor has devised a unique mountain howitzer. He proposes to take the recalcitrant mule as a base, mount a small cannon on his back, attach springs to his hind legs to carry off the recoil, and go frisking about the enemy with his animated cannon. A companion patent for this is one for the use of stilts attached to two of the legs of a horse "so as to plough with the animal on a hill side." Another granger device for which a patent was asked, but not granted, was for "tying a weight of specific gravity to a cow's tail to keep her from switching it when you are milking." A patent was granted to a man who noticed that the moth miller got into the bee hives at the time when the chickens went to roost. Profiting by this coincidence, he prepared a device by which the weight of the chickens going to roost was to operate a door closing the hives. In his application the inventor said: "I expect that after a time the miller may get sense enough to keep watch of the chickens and come in a few minutes earlier." The slot machines are the most numerous of all devices brought before the Patent Commissioner now. It is not a new idea. It was used in the temple of Diana 2,000 years ago. There are hundreds of new slot machines awaiting action by the Department and hundreds have already been patented. The most elaborate of them contains machinery to furnish the passer-by in exchange for his nickel with any one of a dozen drinks or of a dozen or more styles of solid refreshment. One slot machine will deal out fourteen kinds of liquor while another is intended to retail ice water. The latter has been used a little in Western cities. A patent which ought to interest the natural gas companies is one for sinking a boiler so far into the ground that the natural heat of the earth will generate steam. An applicant for a patent for gas announced that he proposed to make it by "heating air red hot." A revolving house is intended to have its front windows continually receiving the rays of the sun. A tower for use in cemeteries is the invention of a man who has been reading evidently of the horrors of burial alive. This tower is to be erected on the top of the coffin after it has been placed in the grave. The top of the coffin is not fastened down with screws, but is arranged to fly open on the pressure of a spring within. If a man who has been burried alive comes to life under one of these patent arrangements, he has only to push the spring, open the coffin, ascend the ladder, and thus reach the open air once more. The man who devised this apparatus has probably not made a fortune out of it. It was patented in 1868. A man patented some time ago a device very suggestive of the mule howitzer. He proposes to put springs under a house to prevent it being overturned during an earthquake. An application was made a long time ago for a patent on a device "to enable a dog to turn a short corner." The inventor proposed to tie a palm-leaf fan to the dog's tail. He said that he had noticed how a dog used his tail to help him keep his equilibrium when tacking, and he proposed to assist the dog by enlarging the available area of tail.

ADULTERATED FOOD.

THE "METROPOLIS" INDORSES OUR VIEWS AS TO A REMEDY.

The AMERICAN ANALYST is a weekly publication, devoted to the careful study and exposition of everything relating to man's physical need and comfort. It is a recognized authority with grocers and large consumers on all matters relating to food products or dietary preparations, their purity, composition, and healthfulness. It has devoted much time and space to the subject of the adulteration of food, and has urged the duty of the State to protect the innocent or ignorant consumer against the greed and wiles of conscienceless purveyors, whose only object is money making. Speaking of adulterated food, the ANALYST very wisely says that where the customer can detect the adulteration at the time of purchase, it is only his own cupidity that betrays him. He takes a poor article because it is cheaper, and, as he hopes, will answer the same purpose as that which is pure and would cost more money. But when the mixture is of such a character that it cannot be detected by inspection, and especially where the articles used as adulterants are noxious or any way injurious to health, it would seem to be within the province of legislation to provide a remedy. How shall this be done? In what way may the law properly interfere to protect the innocent from the guile of the deceiver? Hitherto the efforts in that direction have been confined for the most part to restraints upon the producer. This has been resisted on the ground that it interfered with valuable industries. The pure hog's lard, say the mixers, will not do to ship, will grow soft in any climate, and becomes utterly worthless in a hot country. Therefore the product of cotton seed, and the various other hardening compounds that are added, are really, as they insist, a benefit to mankind. Oleomargarine, according to the patentee, is a blessing to the race. Beef fat or any greasy material "digested with a pig's stomach," as the patent provides, and deprived of its repelling odor, is represented as not only a desirable addition to the world's products, but is far healthier than poor butter that comes from the dairy. Therefore the producers churn it with a little cream to make it taste like the product of cow's milk, and sell it, not only for boarding-house purposes, where it is largely consumed, but even for the tables of private families, many of whom depend on unscrupulous grocers, and cannot detect the imposition. It seems to us that a way might easily be provided to give these ingenious and enterprising manufacturers the full benefit of their industrial undertaking, and at the same time defend the people from undetected fraud. Let the law insist that every one who puts up any food product for market shall stamp it with his name and address, and affix a true statement of the contents. If he wishes to keep the proportions a secret, he may be allowed that reserve, but compel him, under a sufficient penalty, to describe by its proper title every article contained in the mixture. The committee of Congress, in their investigation, found that a large quantity of a manufactured article was put on the market labelled "Pure Family Lard" which had nothing in it that came from the hog. If the actual contents of every package had been printed or branded thereon, and the people had chosen to purchase it, no one would

have a right to interfere. Every package of baking powder should have on it the name of the ingredients. If the consumer has no objection to tartaric acid or alum, it will not hurt the sale to have the fact of their presence duly inscribed. Instead of "Pure Old Java" on a package that purports to be ground coffee, let the inscription read "A mixture of coffee with chicory, roasted wheat, and beans, split peas, rye and potato flour, mangel-wurzel, acorns, lupine seeds, ground date stones, scorched cocoa shells, licorice, and burnt sugar," or so many of these as have been added. Instead of "Pure Ground Pepper" we might have "Pepper leaves with mustard, wheat flour, sago, charred wood, chillies, rape seed, potato, manignette, chicory, rye, olive stones, bone dust, and marine salt." We have not exhausted the list of things actually found as substitutes or adulterations of pure pepper, but this would do for a beginning. For mustard the label might read, "Ground mustard mixed with wheat flour and colored with turmeric or Martin's yellow demitro naphthol." If this did not suit, we have seen cayenne pepper, gamboge, potato starch, pea flour, radish and rape seed, linseed meal, yellow ochre, chromate of potash, plaster of Paris and clay in a package called mustard. We have named nothing that is not common in the packages of these so-called "spices." No manufacturer ought to object to this test. If his added ingredients are innocuous, and the people are likely to esteem them, it is only fair to let the buyer know where he can get them. If he purposely or "inadvertently" omits anything from his descriptive list which the package contains, let him suffer for his want of memory or intended fraud. For table use, the greater portion of the golden fluid now offered in beautiful glass bottles, with showy labels, as the product of the olive, might more truthfully be described as "Pure cotton-seed oil, for salad purposes." Why not compel the producer to print the truth on his ticket? Then those who wish to patronize this "great and growing industry," as it has been recently described, would know exactly what they were eating, and no one would be wronged in the matter. We suggest that this would solve some of the vexed problems, and remove every ground of complaint from the manufacturer who prepares these adulterated or substituted products, and insists that he is contributing to the sum of useful inventions.—*The Metropolis, April* 13.

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

April.

MEAT.—Beef, lamb, mutton, ham, kidneys, liver, sausage, veal.

GAME AND POULTRY.—Brant, pigeon, chicken, duck, turkey, goose, snipe.

FISH.—Anchovy, bass, cod, snipe, eels, carp, catfish, flounders, halibut, herring, lobsters, mackerel, mussels, oysters, perch, rock-fish, salmon, smelt, white-fish, trout, sturgeon.

VEGETABLES. — Artichokes, beans, carrots, celery, garlic, lettuce, onions, parsley, parsnips, potatoes, shallots, spinach, turnips, watercress, radish, rhubarb, sea kale.

PRACTICAL RECIPES.

COD-HEAD SOUP.—Select a large cod-head, wash it, and put it in four quarts of cold water and let it boil for an hour. Strain the soup through a sieve; add three-quarters of a cupful of rice and a finely chopped onion and carrot; simmer for nearly an hour, then add all the fish from the head and season with pepper, salt, and chopped parsley, and serve.

CALF'S-FOOT JELLY.—Boil eight calves' feet in just enough water to keep them well covered until the water becomes a jelly, then remove the feet, and add to the jelly one pound white sugar, one quart port wine, the whites and shells of two eggs; let it boil for four or five minutes.

ROAST CALF'S HEART.—Make a forcemeat with four ounces finely chopped suet, a cupful of fine bread crumbs, some finely chopped lemon peel and parsley, a little grated onion, salt, pepper, a dash of nutmeg, and the yolk of an egg. Fill the heart with this, and roast in a good oven, basting it frequently with hot water in which some butter has been melted; dredge with flour a quarter of an hour before it is done.

OYSTER TOAST WITH POACHED EGG. — Mince two dozen raw oysters; put them in a stew-pan with an ounce of butter, a dash of salt and pepper, and a gill of oyster liquid. Simmer three minutes; moisten slices of toast by pouring a little of the liquid upon it; add the oyster mince, put a poached egg on top, and serve.

SAUCE FOR FRESH PORK.—Slice and fry lightly three good sized onions, cover them with broth or water, add a few chopped mushrooms, a few whole cloves, and a little vinegar; boil gently for half an hour; skim, strain, and if too thin thicken slightly with browned flour rubbed into a little butter.

LOBSTER PATTIES.—Fill some small pattypans with puff paste or good rich crust and bake them. Remove the meat from a boiled lobster, cut it into small pieces, season it highly with salt, pepper, cayenne, and a dash of lemon-juice, and heat to the boiling point in two large table-spoonfuls of butter. Fill the freshly baked tart shells and serve at once.

SPANISH RICE.—Boil one pound rice in salted water till it is quite dry, then add two large tomatoes, a half cupful of grated cheese, and some pepper; heat a platter, pile the rice on it, garnish with thinly sliced tongue and serve.

JAM RISSOLES.—Roll out some crust quite thin and cut into pieces about three inches wide and four long; put a spoonful of jam in the centre of each, fold the edges together, press them so that they will stick, and bake in a hot oven.

CHEWING GUM.

IS IT MADE OF GUM OR OF PARAFFIN?

The fine distinctions required by legal definitions frequently threaten confusion, even when the facts appear to be perfectly clear. There is no room for doubting the inconvenience and danger which may arise from the accumulation of a mass of paraffin wax in the intestines; and yet when any legal interference with the sale of chewing gum, containing 50 per cent. of this substance, is attempted, the charming uncertainties and quibbles which arise are more amusing than edifying. In a recent prosecution at the Hanley Borough Police Court it was first contended that the 14th section of the Food and Drugs Act, which relates to the division of the substance in the presence of the seller at the time of purchase, had not been complied with. Then it was submitted that the article was not one of food, since it was sold simply for chewing. Then it was suggested, that as sweets are so utterly indefinite in their composition, it was impossible to deal with them as ordinary articles of food. And the climax was reached in the contention that it was not sold to the prejudice of the purchaser, as the complainant said he did not intend to eat it. This was extremely ingenious, but the purchaser happened to be the inspector of nuisances, who was merely collecting evidence. The case ended for the present with the imposition of a fine, on the ground that the substance was sold to the prejudice of the purchaser, inasmuch as it was not in the nature of the substance and quality of the article demanded by the purchaser, who asked for gum and got paraffin wax. If the case is ever taken to a higher court, it is quite possible that it may be argued that the complainant did not ask for "gum," but for "chewing gum;" that he did not get "paraffin wax," but only 50 per cent. of "paraffin wax," and the remaining 50 per cent. of unknown ingredients which sufficiently bring the substance within the legal meaning of "chewing gum." But what is "chewing gum?" The following definition might be suggested: A substance of very variable composition, ignorantly employed by children, which, when containing paraffin wax, may lead to very grave dangers, and the sale of which should be prohibited.—*London Lancet.*

BELLAMY'S VISION.

AN ATTEMPT AT CO-OPERATIVE HOUSEKEEPING IN MONTREAL.

Mr. Roswell Fisher of Montreal, whose article on co-operative housekeeping in the *Nineteenth Century* attracted general attention, gave an address on that theme a fortnight ago at the Workingman's School in this city. Mr. Fisher told his audience that some two or three years ago, after nearly twenty years' study of the question of co-operative housekeeping, he found himself in a position to carry out the conclusions at which he had arrived on a scale not so large as he desired, but sufficiently large to admit the essential feature of professional management. He accordingly built, on the principal residential street of Montreal, an apartment house containining twenty apartments, each with eight or ten rooms and forming a complete dwelling but for the omission of appliances for cooking. In the basement, in addition to the furnaces for heating the house, water for baths, etc., and other conveniences of a good apartment house, Mr. Fisher furnished a complete club kitchen, a small private suite for the manager, and a club laundry, with a dining-room. The kitchen is in direct connection with every pantry by electric bells and speaking tubes, and there are two dumb-waiters at convenient points, each serving into ten pantries, two on each floor. In addition to the usual kitchen plant, there is a butler's tray for each tenant and sufficient covered tins and white ware in which to send the meals to the individual service-rooms. In the leases, which are for at least a year, there is a clause requiring each tenant to pay quarterly a uniform tax or kitchen subscription, which assists in covering certain fixed charges of the kitchen, such as the cost of management, the interest on and the depreciation of the plant, fuel and gas, leaving only the wages of the kitchen help, the cost of the food, and a calculated profit of about six to ten per cent. for contingencies. The service of meals is managed as follows; Every day a simple bill of fare for breakfast, lunch, and dinner, conforming to the usual home requirements of the class of tenants in the house, with one or two extras, is made out by the manager for the succeeding day, and is delivered to each tenant at breakfast. Those dishes or meals which are not required are scratched out, and the bill is returned to the management with wants, complaints, suggestions, or remarks added. The manager then is enabled to arrange for the marketing and also to make out breakfast, lunch, and dinner tables for the cook, showing what each tenant requires, at what hours, and for how many persons. Meals cancelled before the hour for cooking are allowed for, and all extra orders sent down are carried out, so far as possible. All the bills of fare are filed, and at the close of the week the totals are presented and the accounts settled. It was stated that the tariff prices for breakfast, lunch, and dinner do not include butter, cream and sugar, which are charged for absolutely as ordered. Nor do they include tea, coffee, fruit, and other deserts, which the kitchen does not supply at all. All extra dishes or meals not shown on the bill of fare, but called for, are charged at cost price and 10 per cent. extra. Twenty-four hours'

notice is required for large lunch or dinner parties. It will be seen that by this plan Mr. Fisher has been enabled to carry out his purpose; that each tenant of his home club possesses a private and individual dwelling in which he is able to live in such a manner and on such a scale as his habits and tastes and means call for, and with all the elasticity of ordinary home life, free from the publicity of the club, hotel or boarding house, and is at the same time spared the ceaseless worry and annoyances of the private kitchen, while enjoying a much better cooking than is possible to the employers of the ordinary cook. The cost of this system, including the kitchen tax, is, in the case of families of two or three, appreciably less than ordinary living on the same scale, while for families of four to six it is about the same. At the opening of the house last May Mr. Fisher promised his tenants he would hand back any profits of the kitchen, if there were any, on the first of next May, and thus make the kitchen a profit-sharing enterprise. This he did for the double purpose of showing the economy of the system and of inducing the tenants to aid this economy by facilitating in all ways the endeavors of the management to cut down waste. So many of the tenants, though of the best class, have shown themselves indifferent to the difficulties of the management and to the waste, both on their own part and on that of their servants, that Mr. Fisher has given notice that next year this profit, now about seven per cent., will not be shared with them, but will be held to meet the extra trouble and expense of management. As after nine months' trial of this system, with all its initial difficulties, none of the tenants are leaving, and as both the home and the kitchen are satisfactory investments, Mr. Fisher considers that he has introduced a successful though only incomplete method of meeting the domestic difficulties of economic kitchen service.

Subscription $1.00 per year. Now is the time to subscribe.

HISTORIC FIRES.

A LIST OF THE GREAT CONFLAGRATIONS RECORDED IN HISTORY.

Among the great fires of history, undoubtedly the burning of the Serapæum library at Alexandria, in the year 640, by the Caliph Omar I., is most widely mourned, as the destruction of 500,000 volumes cut off much of the record of human knowledge at that time. The general impression of the importance and significance of this fire is, no doubt, augmented in great measure by the alleged answer of this Saracen conqueror, who replied to the protest against the burning with: "If these books are against the Koran, they are pernicious and must be destroyed. If they agree with the Koran, they are redundant and need not be preserved;" and it is not generally remembered that Julius Cæsar burned a larger library of 700,000 volumes at Alexandria, known as the Brucian library, B. C. 48, nearly 700 years before the burning of the Serapæum library by Omer I. At times of sack and pillage, Jerusalem has been burned time and again; the most noted instance being at the siege by the Romans under Titus, during the year 70, when a faction called the Sicarii set the city on fire in many places, and eventually 1,100,000 of the inhabitants perished by fire and the sword. Constantinople has, like all Oriental cities, suffered severely from fires, a large part of such losses being undoubtedly due to the fatalism of the Mohammedans, who bow to their kismet. Said a sultan: "If it be the will of Allah that my favorite city burn, it is the will of Allah." In Dillaway's quaint account of travels in the Levant in 1797, it is stated that the sultan is summoned three times to a fire in Constantinople, and if the fire lasts an hour he is obliged to attend in person and bring mules laden with piasters for the firemen. A great fire at Rome, 12 B. C., caused the Emperor Augustus to take measures for increasing the defence against fire, which had been hitherto in the hands of bodies of police, numbering twenty or thirty, stationed in various portions of the city, and re-enforced at times of fire by companies of volunteers. He appointed new officers with the rank of magistrates, who were entitled to wear magisterial robes. Each was attended by two lictors, and provided with a fire organization of 600 slaves. It is probable that this was not entirely satisfactory in its operation, because six years later another fire caused him to undertake further reforms on a scale characteristic of him who "found the city built of brick and left it with palaces of marble." He increased the fire department to a scale commensurate with the needs of the city. Seven thousand freemen were organized into seven battalions, and one battalion was quartered in every alternate ward of the city. These men made careful inspections of the kitchens, of the heating apparatus, and of the water supply in the houses, and every fire was the subject of judicial examination. The cost of the orgnization was maintained by a tax of 25 per cent. on the sale of slaves. Two notable examples of contagions stopped by conflagrations are the burning of Moscow by the besieging Tartars, in July, 1570, when the plague was stopped, and secondly the fire in London, September 2, 1666, which also stopped the plague, and it has been unknown there since. This London fire is properly called the great fire of modern history, because the reforms which were started in consequence of it are living issues in the municipal affairs to-day. The fire was caused by an overheated baker's oven; and in the course of four days it swept over 436 acres, burning 13,200 houses, 89 churches, and St. Paul's Cathedral, causing a damage estimated to be £10,716,000, say $53,500,000. Under the direction of Pepys, the fire was stopped by blowing up buildings, which was, at the time, the only method of reducing a fire that had grown beyond the capacity of the small fire engines. These were on large tubs, and threw a stream of water directly on the fire, as hose was not invented until ten years later (1672) by Van der Heide. The cities of

Buffalo Lithia Water, Spring No. 2, in Bright's Disease, Gout, Stone in the Bladder, and Diseases Generally of Uric Acid Diathesis, Etc., Etc.

DR. WM. A. HAMMOND, of Washington, D. C., Surgeon General U. S. Army (retired), Professor of Diseases of the Mind and Nervous System in the University of New York, etc.

"I have for some time made use of the BUFFALO LITHIA WATER in cases of AFFECTIONS of the NERVOUS SYSTEM, complicated with BRIGHT'S DISEASE OF THE KIDNEYS or with a GOUTY DIATHESIS. *The results have been eminently satisfactory.* Lithia has for many years *been a favorite with me in like cases, but the* BUFFALO WATER CERTAINLY ACTS BETTER THAN ANY EXTEMPORANEOUS SOLUTION of THE LITHIA SALTS, and is, moreover, better borne by the stomach. I also often prescribe it in those cases of CEREBRAL HYPERÆMIA resulting from OVER MENTAL WORK—in which the condition called NERVOUS DYSPEPSIA exists—*and generally with* MARKED BENEFIT."

DR. WM. B. TOWLES, Professor of Anatomy and Materia Medica, in the Medical Department of the University of Virginia.

"BUFFALO LITHIA SPRINGS, No. 2, belongs to the ALKALINE or, *perhaps, to the* ALKALINE SALINE Class, *for it has proved far more efficacious in many diseased conditions than any of the simple* ALKALINE waters.

"*I feel no hesitancy whatever in saying that in* GOUT, RHEUMATIC GOUT, RHEUMATISM, STONE *in the* BLADDER, and in all diseases of URIC ACID DIATHESIS, *I know of no remedy at all comparable to it.*

"*Its effects are marked in causing a disappearance of* ALBUMEN *from the urine. In a* single case of BRIGHT'S DISEASE *of the* KIDNEYS, I witnessed *decided beneficial results from its use, and from its action in this case I should have great confidence in it as a remedy in certain stages of this disease.* In DYSPEPSIA, especially that form of it in which there *is an excessive production of* ACID *during the process of nutrition*, in some of the PECULIAR AFFECTIONS *of* WOMEN, notably in SUPPRESSION of the MENSES, and in CHRONIC MALARIAL POISONING, etc., I have found it highly efficacious."

DR. G. HALSTEAD BOYLAND, late Professor of Surgery, Baltimore Medical College, late Surgeon French Army (Decorated), Member Baltimore Academy of Medicine, Member of American Medical Association.

"In BRIGHT'S DISEASE of the KIDNEYS, ACUTE or CHRONIC, BUFFALO LITHIA WATER, Spring No. 2, is, in my experience, *without a rival*, whether in the PARENCHYMATOUS form or INTERSTITIAL NEPHRITIS. In cases in which the ALBUMEN in the URINE reached as high as 50 per cent., I have known it under a course of this water gradually diminish and finally disappear, at the same time other alarming symptoms were relieved and the sufferers restored to health.

"In STONE in the BLADDER of the RED LITHIC ACID and the WHITE PHOSPHATIC DEPOSIT, the SOLVENT power of this water is *unmistakable.*"

Water in cases of one dozen half gallon bottles, $5.00 f. o. b. here.

THOS. F. GOODE, Proprietor, BUFFALO LITHIA SPRINGS, VA.

America, on account of the larger amount of wood in their construction and the prevalence of irresponsible methods of building, have suffered severely from fires. The first devastating fire in America was probably the one occurring at Boston, March 20, 1760, when 400 dwellings and stores were burned, causing a loss of £100,000. In the colony of Massachusetts Bay, regulations in regard to construction of chimneys and thatched roofs were made as early as March 16, 1630, and various enactments were made at later dates. The ordinance at the town meeting of Boston, March 14, 1645, made provision that each householder should have ladders long enough to reach to the ridge of his house, and a pole "about 12 feet long, with a good large swob at the end of it;" and various graded penalties were provided for those not conforming to the law. Philadelphia has been remarkably free from conflagrations in comparison with other large cities. It does not appear to have been visited by a great fire until July 9, 1850, when a fire along the Delaware River front, at Vine Street, extending over 18 acres, caused a loss of life estimated as high as 33, in addition to 120 wounded, and a pecuniary loss of $1,500,000. New York was visited by a severe conflagration in the southern part of the city on December 16, 1835, which extended over an area of 40 acres, destroying 674 houses, and causing a loss which has been estimated as high as $30,000,000, on which there was only $8,000,000 insurance—an amount which ruined several insurance companies. One of the first of the more recent conflagrations was the burning of Portland, Me., July 4, 1866. The fire was caused by a boy throwing a firecracker into a cooper's shop, for the avowed purpose of scaring the workmen. In this respect the act was an unparalleled success, the damage being about $10,000,000. The Chicago fire, October 9, 1871, was one of the largest in all history, devastating an area of 3½ square miles, and causing a loss of about $190,000,000, on which insurance was paid to the amount of about $100,000,000. Two hundred and fifty lives were reported lost in this fire. Thirteen mouths later to a day, Boston was visited by a fire which extended over an area of 65 acres, burning the best mercantile buildings in the city, and causing a damage of $75,000,000, on which there was an insurance to over $65,000,000.—*Scientific American.*

Cleveland's Cleveland's Cleveland's Cleveland's Cleveland's Cleveland's

Baking Powder

Absolutely the Best.

25 CTS PISO'S CURE FOR CURES WHERE ALL ELSE FAILS. Best Cough Syrup. Tastes good. Use in time. Sold by druggists. CONSUMPTION 25 CTS

Fine Table Wines

From our Celebrated Orleans Vineyard.

Producers of the ECLIPSE CHAMPAGNE,

530 Washington St. SAN FRANCISCO.

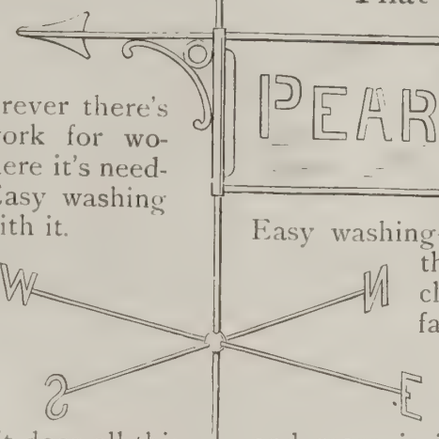
Arpad Haraszthy & Co.

GENERAL AGENCIES:

NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOSEPH R. PEEBLES' SONS CO., 73 West Fourth Street.
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.

North, East, South, West.

That's where *Pearline* goes.



Wherever there's hard work for women, there it's needed. Easy washing goes with it.

Easy washing—better washing. Washing that doesn't wear out the clothes, or hurt the hands or fabric, or tire the washer. Washing that saves money but costs no more than the washing that wastes it.

When it does all this and more, is it any wonder that *Pearline* goes? And it *does* go. It goes to the help of millions of women every day. But there are some who won't be helped. And they're the ones who need it most.

Blowing Peddlers and some grocers will tell you, "this is as good as" or "the same as Pearline." IT'S FALSE—but what a puff for Pearline

198 JAMES PYLE, New York

THE NEW WEBSTER

Just Published. WEBSTER'S INTERNATIONAL DICTIONARY Cost $300,000.

SUCCESSOR OF THE UNABRIDGED.

Re-edited and Reset from Cover to Cover.

A GRAND INVESTMENT for every Family and School.

Revision has been in progress for over 10 years. More than **100** editorial laborers employed. Critical examination invited. **Get the Best.** Sold by all Booksellers. Illustrated pamphlet free.

Caution!—Cheap books called "Webster's Big Dictionary," "Webster's Encyclopedic Dictionary," etc., are being advertised. The body of these from A to Z is printed from plates made by photographing the antiquated 1847 edition. The authentic "Unabridged" (still copyrighted) and the new "International" both bear the imprint of

G. & C. MERRIAM & CO., Publishers, Springfield, Mass., U. S. A.

NAMES FOR DEFINITION.

Mr. Robert Grimshaw, General Editor of the Trades Department of Funk & Wagnalls' Standard Dictionary, being desirous of making as complete as possible his list of mechanical and industrial terms, requests manufacturers of machinery and tools having important parts not found on those of other makers, or the names of which are not yet in general use, to send the name, definition and use of each such part to him at 115 Bible House, New York City.

TO CLEANSE WALL PAPER.—A great many people are interested in knowing how to remove oil marks on wall paper, where careless people have rested their heads. This may be done by making a paste of cold water and pipeclay or fuller's earth, and laying it on the stains without rubbing it in; leave it on all night, and in the morning it can be brushed off, and the spot, unless it be a very old one, will have disappeared If old, renew the application.

REMARKABLE FEAT.—A remarkable feat in the history of the telephone was performed on April 1st. The Paris end of the line which connects that city with London was switched on to the Marseilles wire, and a conversation was carried on with most gratifying results, for the words spoken in London were dirtinctly heard on the shores of the Mediterranean, 800 miles away

TO THIN—"I'll just tell you what it is," remarked a fat, jolly old soul to her companion as the street car rumbled along, "the doctors kin say what they please, but I know it's just flyin' in the face o' natur' to bring a baby up on a bottle. You know Sally Ann Jimson, what lives next door to us?" "Yes," assented the other. "Well, she tried to bring her baby up on milkman's milk, and it died of water on the brain.—*Philadelphia Record.*

INGENIOUS MACHINE.—One of the most ingenious machines recently invented is an automatic apparatus for boring the wooden hubs of wagon wheels and fitting them for the axle boxes. When the wheel is placed in the machine it is automatically centred, the felloe at the same time being trued sideways. The time required for this operation is not more than five seconds. The cutter, a tool revolving at the rate of 5,000 revolutions per minute, is then fed through the hub, the direction and the size being determined by the shape of the box that is to be placed in the opening thus made. When the hole is completely bored the feeding apparatus is automatically thrown out. It is said that the machine is capable of boring about 600 wheels a day.

THE N. Y. HAY EXCHANGE BULLETIN.

OFFICIAL REPORT OF THE HAY AND STRAW MARKET AT NEW YORK.

COMMISSION SALESMEN.

NOTICE.

These names are arranged alphabetically.

WM. AFFLECK & CO.,
Commission Merchants in
HAY AND STRAW,
Office No. 5,
N. Y. Hay Exchange Building.

J. ALSDORF,
Commission Dealer in
HAY AND STRAW,
33d Street and 11th Ave.,
NEW YORK.

E. A. DECKER. F. W. TOMPKINS.
DECKER & TOMPKINS,
Commission Merchants in
HAY, STRAW, GRAIN,
Office: 16 New York Hay Exchange Building.

L. S. DILLENBACK. T. O. PECK.
DILLENBACK & PECK,
MAIN OFFICE:
Room O, N. Y. HAY EXCHANGE, N. Y. City.
STOREHOUSE AND BRANCH OFFICE:
101, 103 and 105 North 5th St.,
and 152 and 154 Berry St.,
Palmer's Dock. Brooklyn, E. D.

EDWIN B. DUSENBERRY,
COMMISSION MERCHANT,
And Wholesale Dealer in
HAY, STRAW AND GRAIN.
No. 1, N. Y. Hay Exchange, New York.

THOS. FONDA & CO.,
Commission Merchants
And Dealers in Hay, Straw, Grain and Country Produce,
13 & 14 N. Y. Hay Exchange Building.

N. A. FULLER,
COMMISSION MERCHANT IN
HAY AND STRAW,
33d Street and 11th Ave.,
NEW YORK.

J. H. Hubbel. Oscar Kent.
HUBBEL & KENT,
HAY AND STRAW
COMMISSION MERCHANTS,
New York Hay Exchange Building.
Personal attention guaranteed all consignments
Correspondence solicited.

THEO. P. HUFFMAN & CO.,
COMMISSION MERCHANTS
In Hay, Straw, Grain, Feed, &c.,
648 & 650 West 34th Street,
Bet. 11th & 12th Aves., N. Y.

The N. Y. Hay Exchange is located at 601 W. 33d St., corner 11th Avenue.

Only the cards of members of the N. Y. Hay Exchange appear on this page.

RULES FOR GRADING HAY AND STRAW

As Adopted by the N. Y. Hay Exchange.

CHOICE OR PRIME HAY—Shall be pure timothy, properly cured, bright, natural color, sound and well baled. No. 1—Shall be timothy, not more than one-eighth (⅛) mixed with "red top" properly cured, bright natural color, sound and well baled. No. 2—Shall be timothy, not more than one-quarter (¼) mixed with red top and blue grass, properly cured, good color, sound and well baled. No. 3—Shall include all timothy not good enough for No. 2, proportionately mixed with blue grass, red top, and clover, sound and well baled. SHIPPING—Shall include all hay not good enough for other grades, and may be natural meadow, free from wild or bog grass, and must not contain over one-third (⅓) clover, sound and well baled. CLOVER MIXED—Shall include all hay containing not over two-third (⅔) clover, and one-third (⅓) timothy, properly cured, sound, and well baled. CLOVER—Shall be medium grown, properly cured, good color, sound, and well baled. NO GRADE OR REJECTED HAY—Shall include all hay badly cured, musty, stained, or in any way unsound.

No. 1. RYE STRAW—Shall be clean, bright, long Rye, in bundles, sound, well and securely baled. No. 2—Shall be long Rye, in bundles, sound, well and securely baled. SHORT RYE—Shall be clean, not bundled, sound, well and securely baled. OAT STRAW—Shall be clean, bright, sound, well and securely baled.

In the New York market bale-wood is weighed in without tare. In all other markets it is deducted.

These quotations for choice, No. 1 and No. 2 hay are for large bales. 5c. per cwt. less when in perpetual press bales.

The New York quotations are per cwt. At other points, per ton.

NEW YORK, April 20, 1891.

The following are the market prices to-day at New York.

	Large Bales.	Small Bales.
Fancy Hay	55c @ 70	60 @ 65
No. 1	60 @	55 @ 60
No. 2	50 @ 55	50 @ 55
No. 3 and Shipping	40 @ 45	40 @ 45
Clover Mixed	45 @ 50	45 @ 50
Clover	40 @ 45	40 @ 45
Long Rye Straw	80 @ 85	45 @ 55
No. 2 "		
Oat Straw	35 @ 40	35 @ 45
Wheat Straw	40 @ 45	

Receipts week ending April 18, as follows:

Via N. Y. Central	144 cars.
" West Shore	105 "
Other roads by Lighter, 34th Street	115 "
Total	364 cars.

The receipts by rail have continued light, but the river barges have brought forward considerable hay, thereby preventing any advance in prices. Common and medium grades are plenty, while prime or fancy hay in large bales is meeting ready sales at 65 to 70 cents.

Perpetual pressed bales of medium and common qualities have accumulated owing to small shipments of cattle, and therefore sales have been forced in order to unload cars, as all roads, except the New York Central and West Shore, are threatening the enforcement of demurage charges.

H. B. Jenkins. F. S. Williams.
JENKINS & WILLIAMS.
COMMISSION MERCHANTS IN
HAY, STRAW AND GRAIN,
HAY EXCHANGE.

JOHN KERWIN & SON,
DIRECT RECEIVERS OF
HAY, GRAIN and GENERAL PRODUCE
DEPOT AND STOREHOUSES,
Palmer's Dock, Nos. 97 & 99 North Fifth Street.
BROOKLYN, N. Y.
SHIPPING ADDRESS, PALMER'S DOCK, BROOKLYN, N.Y.
West Shore R. R., N. Y. C. & H. R. R. R., N. Y. L. E. & W. R. R., Pennsylvania R. R., D. L. & W. R. R., Lehigh Valley R. R., and connections.

W. J. OVEROCKER. PERRY HATCH.
OVEROCKER & HATCH,
Commission Merchants in
HAY, STRAW AND GRAIN
33d Street & 11th Avenue, New York.
References: West Side Bank, New York City; Exchange Bank, Holly, N. Y.

Gilbert Plowman, NEW YORK. Spencer Billington, FORT HUNTER, N. Y.
PLOWMAN & BILLINGTON
COMMISSION MERCHANTS,
HAY, STRAW, GRAIN, &c.
No. 15 N. Y. Hay Exchange,
33d St. & 11th Ave., NEW YORK.

JAMES ROZELL & SON,
Commission Merchants and Wholesale Dealers in
HAY, STRAW, GRAIN
AND
COUNTRY PRODUCE.
N. Y. Hay Exchange, New York.

SKINNER, BLOOM & CO.,
Successors to Rogers, Skinner & Co.,
COMMISSION MERCHANTS
And Dealers in
Grain, Flour, Hay, Feed, Meal, &c.,
74 CORTLANDT STREET, - NEW YORK.
Barge GYPSIE, Foot Bridge St., Brooklyn.

H. SLINGERLAND,
Barges MERCHANT and HARVEST QUEEN
Foot of West 11th Street,
HAY AND STRAW.
Also, 33d and 35th Streets, and all Railroad terminals. Special facilities for lighterage free goods.

CHARLES F. SWAN,
Commission Merchant in
HAY, STRAW & GRAIN,
At all the Railroad Terminals
in New York, Brooklyn, Jersey City, &c.
MAIN OFFICE,
108 BROAD ST., NEW YORK.

TITUS, WELLS & WILLETS,
Commission Merchants and Dealers in
HAY AND STRAW,
133 Roosevelt St.,
NEW YORK.

G. E. Van Vorst. James M. Hillery.
VAN VORST & CO.,
COMMISSION MERCHANTS,
HAY, STRAW AND GRAIN
N. Y. Hay Exchange, 33d St., & 11th Ave.
562 & 564 West 34th St., NEW YORK.

NOTICE.

These names are arranged alphabetically.

HOSMER, CRAMPTON & HAMMOND,

NO. 43 COMMERCIAL STREET,

BOSTON.

COMMISSION MERCHANTS,

HAY, STRAW, FLOUR & GRAIN.

E. B. HOSMER, G. W. CRAMPTON, BENJAMIN HAMMOND, A. L. ROBINSON.

BOSTON HAY AND STRAW MARKET.

Hay, choice to fancy, in large bales	$13.50 to $14.50
Hay, choice to fancy, perpetual pressed bales	13.00 to 13.50
Hay, fair to good	11.00 to 12.50
Hay, poor to ordinary	9.00 to 11.00
Hay, Clover and Clover mixed	10.00 to 11.00
Hay, swale	8.00 to 8.50
Straw, Rye, good to prime	17.00 to 17.50
Straw, Oat	8.00 to

BOSTON, April 18th, 1891.

Receipts for the week are 205 cars of Hay and 6 cars of Straw; corresponding week last year, 192 cars of Hay and 32 cars of Straw. The receipts are not large, and the stocks here are being slowly reduced. The demand for hay is not active. We quote the market steady with an occasional fancy car selling above our outside quotations. Rye straw is firmer; some fancy cars being held at $18. Oat straw very dull.



H. F. WILSON,
WIRE BALE TIES,
458 WEST 38th STREET, New York.

HAMMOND'S
CELEBRATED
Calumet Oleomargarine

Strictly pure, cheap and healthful.
Ask your grocer for it.
Put up in packages of all sizes, also prints and rolls.

C. H. HAMMOND CO.,
607 to 615 THE ROOKERY,
CHICAGO.

Also offices at Boston, South Omaha, Neb., and Hammond, Ind.

We can save you Fifty Dollars when you Build. Send for  A complete set of Plans to build from, simply state about price of dwelling desired. 25 cts. in stamps. Our book "Beautiful Homes." 25 cts. Our monthly book "The National Builder," 25 cts. Address
The National Builder, Adams Exp. Bldg., Chicago, Ill.

SWIFT'S
CHOICE
Chicago Dressed Beef
AND
MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,
UNION STOCK YARDS,
CHICAGO, ILLS.

PUBLICATIONS OF THE
ANALYST PUBLISHING CO.

THE AMERICAN ANALYST.
Weekly. Every Thursday. $1 per year.

THE ROOFER, TINNER AND SHEET-IRON WORKER.
Monthly. 15th each month, $1 per year.

THE LEATHER MANUFACTURER.
Monthly. 1st each month. $3 per year.

Reliable agents and representatives wanted everywhere on liberal terms. Address

ANALYST PUBLISHING CO.
19 PARK PLACE, NEW YORK.

NATURAL MINERAL PURGATIVE WATER,
From the Springs of
VILLACABRAS.
Prescribed by the Highest Medical Authorities.

Stronger effects than any other under smaller volume. No smell—no repulsive taste—no after-constipation—no gripes. As a daily laxative it can be taken either pure or mixed with milk, tea or broth.

Sold by all Good Druggists.

HARTSHORN'S SELF-ACTING SHADE ROLLERS

NOTICE SCRIPT NAME OF Stewart Hartshorn ON LABEL, AND GET THE GENUINE HARTSHORN



A HIGH-GRADE PIANO

AT A VERY MODERATE PRICE.

NEW DESIGNS. FANCY WOODS.

Terms Easy. + Monthly Instalments.

TWO, THREE AND FOUR PEDALS.

Catalogues, Prices, Terms, Etc., sent to any address.

EVERY PIANO WARRANTED 5 YEARS.

(Mention this Paper.)

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,

HOWARD STREET, BOSTON, MASS.

GOLD MEDAL, PARIS, 1878.



W. BAKER & Co.'s Breakfast Cocoa

from which the excess of oil has been removed,

Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

"BILLET"

are

Carefully Selected French Sardines, Packed in Choicest Olive Oil

AT ALL LEADING GROCERS

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

BROMO SODA.

Useful in Nervous Headache, Sleeplessness, Excessive Study, Over Brainwork, Nervous Debility, Mania, Etc.

DOSE—A heaping teaspoonful in half a glass of water, to be repeated once after an interval of thirty minutes, if necessary. Each teaspoonful contains 30 grs. BROMIDE SODIUM and 1 gr. CAFFEIN,



SUPPLIED BY ALL DRUGGISTS

Ask for (Bromo-Soda, Warner & Co.) and take no other "Bromo."

THE ORIGINAL AND GENUINE
(WORCESTERSHIRE SAUCE).



LEA & PERRINS' SAUCE

In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—

Lea & Perrins

Beware of Imitations; see that you get Lea & Perrins'

For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS, NEW YORK.

RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

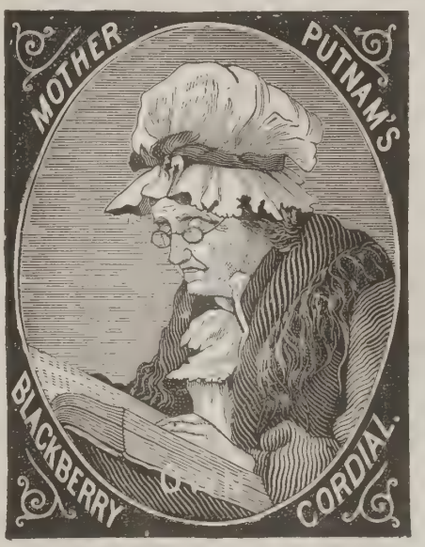
R. W. ROBINSON & SON,
184 Greenwich St., N. Y.

BLAIR'S PILLS.



Great English Remedy for GOUT, RHEUMATISM and KIDNEY COMPLAINTS.
SURE, PROMPT and EFFECTIVE.
Large Box, 34; Small, 14 Pills.
At all Druggists, and
224 WILLIAM STREET, NEW YORK.

Pure LAGER BEER,
"IMPERIAL" and "CULMBACHER"
Brewed & Bottled
SPECIALLY FOR
HOTELS, CLUBS
AND
PRIVATE FAMILIES
BY
Beadleston & Woerz
291 W. 10th St. New York.
Orders by Postal Card promptly attended to.



C-U-R-E-S
DIARRHŒA, DYSENTERY,
MALARIA,
all ailments of the bowels. Is an anti-dyspeptic, and a DELICIOUS INVIGORATIVE. Leading Physicians prescribe it for ADULTS AND CHILDREN. *FOR SALE* by Druggists and dealers.
RHEINSTROM BROS., DISTILLERS OF FINE LIQUEURS,
54, 56, 58, 60, 62 E. 3rd STREET, CINCINNATI, O.

ESTABLISHED IN LONDON, 1831.
DEAN'S
PATENT
Ardenter Mustard



W. G. DEAN & SON,
361 & 363 WASHINGTON STREET; 84, 86, & 88
NORTH MOORE STREET, N.Y.

We shall be glad to supply our readers with any periodical published at club rates.

Send us a postal naming periodical and we will quote you prices.

ANALYST PUBLISHING CO.,
19 Park Place,
New York.

Don't kick



because your business is bad, but advertise If you don't know how to, write to us and we will tell you.

We will prepare your advertisement or give you advice and assistance to aid you in preparing it yourself. We will have the advertisement set in type and procure illustrations if any are needed. When a satisfactory advertisement has been produced we will furnish proofs and an electrotyped pattern to be used in duplicating the advertisement if the display or illustration make an electrotype desirable.

Address GEO. P. ROWELL & CO.,
Newspaper Advertising Bureau,
10 Spruce St., N. Y.

INSTRUCTIONS TO SUBSCRIBERS.

The **Names of all Subscribers** are registered as soon as received, and paper is always promptly forwarded.

Postage.—The postage to all parts of the United States and Canada is paid by the publisher.

Remittances of small sums may be made with comparative safety in ordinary letters. Sums of one dollar or more must be sent by registered letter or P. O. money order, otherwise we cannot be responsible for same. Silver must not be sent in a letter.

Postage Stamps will be received for the fractional part of a dollar, and in any amount when it is impossible for patrons to procure bills, but you must send one or two-cent stamps only.

SUBSCRIPTIONS.—The AMERICAN ANALYST will be sent one year to any subscriber for ONE DOLLAR. New subscriptions can begin at any time.

We Stop the Paper at the expiration of the time paid for unless a renewal of subscription is received. Those whose subscriptions have expired must not expect to continue to receive the paper unless they send the money to pay for it.

Change of Address.—Subscribers wishing their addresses changed must invariably give their former as well as new address.

Missing Numbers.—It occasionally happens that numbers of our paper sent to subscribers are lost or stolen in the mails. In case you do not receive any number when due, write us a postal card and we will cheerfully forward a duplicate of the missing number.

Most Important of All.—In every letter that you write us, never fail to give your full address, plainly written—name, post-office, County and State.

Address all letters to

THE ANALYST PUBLISHING CO.,
19 Park Place, New York.

THE GREAT AMERICAN TEA COMPANY

LADIES

GET UP ORDERS.
Entire New Departure.
A HANDSOME PRESENT TO EVERY SUBSCRIBER.

THE GREATEST INDUCEMENTS EVER KNOWN TO INTRODUCE OUR NEW GOODS.

If you enjoy a cup of **Delicious Tea** send in your orders. 3½ lbs. Fine Tea by mail on receipt of $2 and this "ad". Beautiful premiums given away with $5 orders and upwards. The **most extraordinary bargains** ever offered, during the next thirty days. China Tea Sets and Lamps with $10, $15 and $20 orders to introduce our excellent **New Crop Teas.** Formosa and Amoy, Oolong, Congou, English Breakfast, Japan, Imperial, Young Hyson, Gunpowder, Sun Sun Chop and Mixed. Good mixed teas 20c. per lb. Headquarters in United States for Fine Teas. One pound of our tea will go farther than three pounds of trash. Thirty years' national reputation for selling **Pure Goods Only.**

THE GREAT AMERICAN TEA COMPANY,
P. O. BOX 289. 31 and 33 Vesey Street, New York.

Tabasco Pepper Sauce
OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced, by connoisseurs, to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY,
NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

SUBSCRIBE
FOR THE
AMERICAN
ANALYST
$1.00 Per Year.

GLENN'S SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,
C. N. CRITTENTON,
115 FULTON STREET,
NEW YORK.



THE CENTURY DICTIONARY

comes nearer to being a complete catalogue of the English language than any dictionary ever published. But it is not merely a dictionary: it is an encyclopedia of common things as well. It has been ten years in preparation. The leading scholars of the country have contributed to its pages. It is the latest dictionary and it ought to be, and is, the best.

A large descriptive pamphlet containing full-size sample pages, etc., will be mailed to any one sending five 2-cent stamps to
THE CENTURY CO., 33 East 17th St, New York.

Be progressive and keep abreast of the times. Avoid dyspepsia by using **Lard Compound** and **Cottolene,** a substitute for lard.

The highest medical authorities pronounce them healthful; and expert cooks commend them.

Our **Clairette** brand of cotton oil soap is the purest and best laundry soap in the market; as pleasant to the hands as genuine castile.

N. K. FAIRBANK & CO.,
CHICAGO AND ST. LOUIS.

A BUSINESS BENEFIT.

ADVANTAGES TO ADVERTISERS OFFERED BY THE "AMERICAN ANALYST."

It has not the limitations of a daily paper. No one reads yesterday's paper. A monthly lives at least a month, while a weekly is fresh four times a month, and its audience is not limited by geographical lines, but the circulation is all over the United States and Canada.

It contains matters of interest to everyone, especially the ladies of the household, and is, therefore, sure of a careful perusal. Our audiences are intelligent and of the better classes, who have money to spend, and any well worded advertisement in our columns, giving real information, will receive a careful perusal.

Our rates are as low as our circulation affords. Large circulation and original matter cost money and those advertisers who desire to realize these benefits must expect to pay reasonably for them.

Advertisements in our columns are permanent. Most of our subscribers bind their numbers.

Our advertisements are set up in an attractive form, sure to call the attention of the reader.

Anything that our readers want, or for which a demand is to be created, not wholly of a local nature, will pay to advertise with us.

We take only advertisements from legitimate houses of really meritorious goods, and give them all the editorial assistance they deserve; consequently our readers knowing this, have confidence in advertisements contained in our columns.

The fact that we have the best and largest houses in every branch of trade advertising with us, and that they always renew as their seasons arrive, proves beyond a doubt that they have found the AMERICAN ANALYST a good advertising medium. Why should not you?

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 18. NEW YORK, THURSDAY, APRIL 30, 1891. WHOLE No. 218

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - - $1 per year.
Single Copies, - - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.

Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.

Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,

H. LASSING, M. D., } *Editors.*
T. P. McELRATH, }

No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

Bicycle Science 207
British Domestics 206
Cheapness Not the True End 208
Diners and Dining 209
Domestic Dietetics 208
Editorials 205
Our Domestic Food Supply; Electric Base-Ball; Tin from Silk; Women Collegiates; Cause of the Grip.
Hay Market Official Bulletin 212
Map Mounting 209
Piteous Plea 208

OUR DOMESTIC FOOD SUPPLY.

The advance sheets of the forthcoming April report of the Agricultural Department contain some interesting points in refutation of the assertion that has lately been gaining credence, that this country will not be able to produce food in proportion to the increase of its population. Mr. Dodge, the statistician of the bureau referred to, summarizes his discussion of the subject as follows: "This country has not reached the limit of agricultural production. It has not even approached it. One-third of its area is either too dry or too wet for present cultivation, awaiting irrigation or drainage. Of the other two-thirds there is much not included in farms; its farm area is not all utilized, and the cultivated area may become far more productive. Farm labor is not sufficiently effective; its distribution could be more harmonious and profitable. Prices of cereals have sometimes been reduced by over-supply. Cotton, with a product of 22,000,000 bales in three years—a quantity greater than the production of six years prior to 1860—begins to decline in price. At the same time, there is a failure to produce the sugar required, though there is cane land sufficient for an ample supply, and beet root sugar *ad libitum*, without mentioning the possibilities of sorghum. There might be tens of millions of dollars annually coined from various fibres, large extension of fruit growing, and introduction of many economic plants to be made the basis of new industries. The material now produced for food consumption might be put in more attractive form for market, and a large contribution levied upon the gastronomic and æsthetic tastes of consumers. It is not true that the wheat of the world is declining. It is not difficult to prove the existence of 2,300 million bushels as an average, and there is no prospect of decrease. Annual fluctuations, from climatic causes, will produce variation in price, which the distribution of harvests of different climates through the year and increase of international transportation facilities will help to equalize. The United States will continue to produce a surplus for export, until the wheat culture of the plains shall have given place to more varied and profitable culture, and increasing numbers of non agricultural population shall require for bread the entire crop. It is proper to say that the tendency is towards a better distribution of crops, and to higher prices and greater profits. The proportion of agricultural labor will decrease, non-agricultural will increase, agricultural production will be more varied, rural intelligence and skill will advance, and the farmer be in better position to demand and secure an equitable share in the net proceeds of national industries."

ELECTRIC BASE-BALL.

The Boston genius who proposes to introduce electricity into the Great National Game of base-ball must be oblivious of the fact that he is striking at one of the most cherished features of that cheerful and perilous amusement. Electricity is used for almost everything, but we doubt whether it will ever be used in base-ball. The Boston innovator in question proposes to place electric buttons at each base, which, on being pressed by the foot of the player, will record that fact at some convenient place on the grounds, and in this way show conclusively whether the runner was "out" or "not out." But to reduce this question to an electric certainty would destroy some of the most interesting features of the game. There is no finer sight on the American ball ground than an umpire in the act of interviewing a baseman who claims that he is "out." To see him brush the sand off his clothes, angrily gesticulate, and excitedly argue the point with the other players, always throws the bystanders into tumultuous raptures. But incidents like this would disappear with the electric button; there would be no chance for dispute. Besides, the umpire, who is now one of the most interesting figures in the game, would sink into comparative obscurity. His decisions of the subtle question which the Boston man proposes to decide by electricity give rise to some of the most exciting features of the game. They excite the derisive jeers and howls of the crowd in shirt sleeves that add an interest to base-ball which its lovers would not like to miss. The Boston man's device, it is certain, would not be popular with most ball crowds.

TIN FROM SILK.

With the development of our native tin mines, and the increasing expansion of the tin plate industry in the country comes information of a new field of enterprise in that direction. An ingenious Frenchman, according to our foreign exchanges, has discovered a process of recovering the tin contained in the wash-waters of silk which have been weighted, and has accordingly received from the French Society for the Encouragement of National Industry the prize allotted for the utilization of residual substances. As it is estimated that Lyons alone will effect an annual economy of $60,000 by these means, the gentleman deserves his reward. But the history of the reclamation of waste products, although it has been full of surprises, and may be considered an amazing testimony to the genius and patience of man, contains nothing more remarkable than this profit derived from the refuse of this excessive adulterant. The question has been more than once asked why silk rags had no value, but they may yet be sought after, not for the sake of silk, but of tin, and if we had an industrial mint we might complicate the contingency of an old silk gown, split and torn because it was as much metal as textile, being converted into a dripping pan or some other kitchen utensils.

WOMEN COLLEGIATES.

The statement is frequently made as a reproach upon women that they do very little to assist in the education of women. Their money, when they have any to bestow, goes to endow men's colleges, while those founded for their own sex struggle along with little assistance. This reproach, if ever it was just, is hardly so at the present day. The Massachusetts Society for the University Education of Women is raising by subscription, mostly among women who are not themselves long out of college and whose means are limited, about $7,000 a year to help poor girls at Boston University and at Harvard Annex. The Vassar Students' Aid Society, composed of former students of Vassar, is supporting five scholarships for girls without means desiring an education at that college, and now the Association of Collegiate Alumnæ, which includes graduates of sixteen of the best colleges in the country open to young women, is offering two fellowships, one of $500 a year for post-graduate study in a European university, and another at $350 a year for post graduate study in an American college. The time is coming when, through the efforts of the women who have themselves been "personally conducted" through the so-called higher education, it will be as easy for a poor girl to

get free tuition as it now is for a young man. The European fellowship of the alumnæ is to be awarded for the second time this coming June.

CAUSE OF THE GRIP.

Dr. Henry B. Baker, ex-President of the American Health Association, has informed his colleagues of the Michigan Health Board that he has discovered the cause of the grip. He says that the germs of influenza are generally at all times present, but there must be certain coincident meteorological conditions to irritate the throat and air passages sufficiently to let the germ gain an entrance to the body. These meteorological conditions in this instance were the excessive prevalence of north and northeast winds and the excessive amount of ozone during the last three months.

BRITISH DOMESTICS.

HOW THE BRITISH HOUSEHOLD IS SERVED.

Mr. E. L. Wakeman, writing from London, under date of March 24, to the *Sun*, has this to say of the servant question in Great Britain: "There is in Great Britain a line of nobility, not set down in Burke's Peerage, as rigorous in distinctions, as unyielding in established rights and traditions, as impregnable against innovation, and as haughty in the enjoyment of its caste and privileges as that authenticated nobility and aristocracy which its different ranks as often rule as serve. These are the lords and ladies of that vast and ordinarily mysterious realm known as the "below stairs" of British life. They are one and the same in England, Scotland, and Ireland. While British politics may boil in Ireland, stew in Wales and Scotland, and simmer in England, the real United Kingdom, imperturbable to politics, calm and impassive in the face of commercial disaster or social change, is held together as with ribs of steel, rivets of copper, and cappings of brass, by the adamantine solidarity of this invincible nobility—the British dames of the duster, ladies of lapdog and luggage, lords of the ladle, barons of bells and boots, and peers of the pantries and pots. As a result of several years' observation, I should say that the chief characteristic of the British servant, whom we may fairly call the English servant, is a never-failing consciousness, and insistance upon the cognizance by all others, of his, or her, exact place, whatever the place may be. Because of this, much else may be condoned. There is only one other class of servants in the world that gains so much through the same characteristic in a certain degree of dignity. This is the African. However much you may "elevate" and educate the latter, place them in any form of service and the old consciousness of propriety in distinctions instantly returns, and with it the fine, though often pathetic dignity of themselves asserting the distinction. The true man or woman of service possesses a real, if sometimes sombre pride in serving a real gentleman or real gentlelady; and while you may not find the African's amiability in any apparent unconscious defining of relations in your English servant, it is the one unvarying rule of feeling, thought, and action of his or her whole life to truly serve the truly noble and considerate, and to truly rule, by endless insistance of rights, perquisites, and traditional dignities, the ignoble and the parvenu. The number, wages, and ways of the servants employed in and about the great halls, seats and castles of Britain almost tell the story of their masters. First and foremost is the stewart, who is responsible to milord and lady for the entire establishment, the servants, hiring of servants, and the purchase of all ordinary necessities, such as food, except meats, which is invariably the perquisite of the cook. The steward receives £80, and an unlimited amount of noble blackguarding, per year. Next in importance, if not indeed the first, is the housekeeper. She is usually a maiden lady of severe age, or a widow culled from poor relations. She must be a person of infinite expediency, common sense, experience, and with a soul and physique of iron. She usually has entire charge of the detail of all domestic matters; holds the keys to every private apartment and secret compartment; with her assistants makes, lays, and repairs all carpets; cleans and rehangs all tapestries; frequently originally embroiders the finest of draperies; packs, unpacks, rehangs and drapes all paintings; prepares and marks with the family crest all linen and laces; cares for the statuary, and attends to the interminable cleaning and waxing of floors. She receives from £20 to £25 per year, having under her from one to two assistant housekeepers, whose yearly wages are from £12 to £16. In a general way, all the female members of the place are amenable to the head housekeeper, who is at no time away from her post. The next of these in grade is perhaps this governess. The necessary though unfortunate person is expected to educate and form the manners and morals to the age of twelve of the children. She must read, write, speak, and teach French and German, and be able to instruct in the rudiments of Latin, the sciences, and philosophy. She must sing, and teach vocal music, and play and instruct upon the piano and harp. In fact, she must be the superior, companion and servant of her charges. Her compensation is £40 to £60 per annum, and many opportunities for intrigue. In the greatest houses she is allowed two, and sometimes three nursery maids, at from £10 to £16 each. There is an upper housemaid at £16, an under housemaid at £12, and from two to four assistant housemaids, at £10, all really under control of the housekeeper. But the ladies' maids, who are responsible only to their mistresses, hold what are regarded as the most desirable positions; insomuch as, while the most exacting duties are required, they receive from £30 to £50 a year, while their opportunities for travel and sightseeing are unlimited. The lady's maid is usually a young woman of excellent education and genuine accomplishments, and of extraordinary patience and finesse. To follow her in one day's duties would assure any one of all that. Her breakfast must be taken while milady is still sleeping, for when she wakens her cup of cocoa must be ready, after which the bath is given and milady's hair and toilet "done." While the latter is at breakfast her chamber must be righted and aired and the morning dresses arranged. If her ladyship goes for a drive or ride she must be again dressed for the same; and while she is absent, the maid, who in most cases, is a thorough modiste, must busy her fingers at sewing. It is not customary to give her new cloths to cut, but she must be competent in all repairing and even in cleaning and re-making a soiled costume. She lunches at the same hour with her mistress, but hurridly, for, if in the city, she must during this time attend to necessary shopping. After lunch hour her ladyship is dressed for going out or for receiving at home. Then again comes the round of sewing, or mending, getting out her ladyship's dinner gown, etc., and assorting and polishing her jewels for possible evening wear. Then her mistress must be dressed for dinner, and after her own dinner is eaten, the evening costume complete must be laid out, some finery removed and bits of fresh lace added here and there; when she is prepared to fold, seal, and post such letters as her ladyship may have written just after dinner, by which hour the ordeal of placing her titled ward in full evening costume is at hand. This passed, the maid may busy herself getting costumes for the morrow in order, perhaps steal out for a half hour with the ladies' maids coterie; but woe be to her if she is not smilingly in waiting, on her ladyship's return, with the latter's chamber in perfect order for retiring, at which she assists, and then lies down like the faithful animal she is, in a room next her mistress, within call of bell, which is liable to summon her at any hour of the night, or, rather, the morning. All lower female servants hold the lady's maid in deadly hatred, the while longing for her place as one almost possessing the honors of royalty itself. The female servants also comprise a head laundress at £30 and two or three assistants at £12 each per year; an assistant cook, who must be equal in ability to the *chef*, and receives £20; two additional assistant cooks, or kitchen maids, at £14, and two scullery maids at £12. The head butler is a sort of generalissimo of the male servants of the household. A majestic bearing is a fortune to this fellow. He is the general-stand-around-and-look-awful of the house; but must have an eye to the welfare of guests and the character and behavior of his inferiors. He is also the head waiter. He attends to the table and its proper setting and service at all times; presiding at the carving and other mysteries of the sideboard; for all of which he receives £75 per year. The under butler, at £35, has entire charge of the silver. It practically never leaves his hands or sight, as he not only delivers to, and receives from, the hands of the butler all pieces used, but washes, polishes, and sleeps alongside their receptacle cases in the pantry. During seasons of unusual entertainment, he also assists the head butler at meals. There are generally also first, second, and third footmen. These receive about the same wages as the under butler. They clean milord's clothing, which a valet scorns to do save when his master travels, assist at meals as waiters, wash glass and silverware, are regarded as general help under the butlers; and are, properly speaking, only footmen when on duty as such with the carriages. Among the other male servants is milord's valet, with well-known duties. A bright one receives £70 per year, and will easily manage to secure as much more. Then there is the head cooks, to none of whom are paid one-fourth the price given by the American nouveau-riches to their recently imported chefs, who receive from £125 to £150, with perquisites of about £50 from the sale of drippings and and fats. There is also a head coachman, at £60 to £80, under whom are a second coachman at £25, a stud groom at £20, and grooms, stablemen, and helpers at from £10 to £20 each; and one or two "odd men," who attend the servants' hall, carry baggage, clean boots, and are a sort of everybodys' men to all below stairs. The whole number of servants at one of these princely houses is therefore very large. I have only enumerated those directly serving the household itself, whose members may not number a half dozen, and in seasons of entertainment will not average more than two dozen souls. Among all these house servants there are what might be called an upper and a lower house. Precedence is as severe a master and scourge here as with the nobility themselves. The hours for servants' meals are: Breakfast, 8; lunch, 11; dinner, 1; tea, 5; and supper from 9 to 10. The upper house includes the steward, butler, housekeeper, the head cook, the valets, and the ladies' maids. These usually take all their meals by themselves, in either the steward's or housekeeper's room, where they occasionally lounge and do their necessary correspondence. The lower house comprises all other servants, of whom the under butler or assistant cook takes precedence. In some houses all the servants dine together, the upper servants assembling in the housekeeper's room, from which they solemnly march to the servants' dining hall, the lower servants remaining standing until their betters are seated, the butler at the head of the table. No conversation whatever is permitted while the joint is being partaken of. The lugubrious silence and austerity of this gathering are inconceivably ludicrous. When the meat course is finished the upper servants rise. The lower servants follow with military alacrity. The former, in their proper order of precedence, like automatic puppets, then march back into the steward's room, where, in the greatest punctillo, pudding and dessert are served. Meanwhile the lower servants, relieved of the presence of these, their severest masters, fall to small talk, cheese and small beer to their hearts' content. Other grotesque forms among these folk are noticeable. Guests' servants invariably take the rank of their visiting master or mistress. The valet of a lord is seated next the

butler, and is often housed and "entertained" by the steward. The maid of a countess or duchess is "handed in to dinner" below stairs with all the ceremony which her titled mistress may receive one story higher. But an ordinary servant or footman must accept rigorous "pot luck" with members of the lower house. Again, the upper servants must always be addressed by the lower as "Mr.," "Mrs." or "Miss." But among footmen and housemaids in general dignity often gives way to alacrity, which, in turn, imposes the highest honors. For instance, above the clamor of morning bells will be heard such startling exclamations as "Dunraven, there's yer man's bell!" "Marlborough, be lively now!" "Manchester, yer ol' boy's moving!" or "Tweedmouth, yer valley wants ter groom ye!" Besides the thirty to forty servants employed about the household and stables, the larger establishments require an equal number out of doors in various capacities. First, there is the "agent," who has general charge of the estate, indeed often the entire control of the property. Frequently with him are a half dozen accountants and clerks. The next man below him is the bailiff. His province is to look after the home farm and cattle. This is no sinecure, for on some of the greatest estates farming and grazing are conducted on a large scale, and this entirely exclusive of the fancy farming and gardening, in which nearly every one of the nobility indulges. Sometimes, enclosed by the inner walls surrounding the hall itself, though oftener at some little distance away in well-ordered arrangement, will be found outbuildings, graneries, machinery, storage houses, mill houses where grain is threshed, logs are sawed and feed is ground by steam, and covered enclosures for young stock, in number and capaciousness quite surprising even to one accustomed to the provision for the same by the most noted American farmers. A host of hangers-on find lazy employment here. Then upon a demesne of several thousand acres there will be a head gamekeeper, who will be allowed a dozen men to assist him in breeding and caring for the game and in protecting it from the inroads of poachers. Some of the finest forests in the world are upon these estates. Each requires a head forester, with half a dozen men under him. New trees are being planted constantly. Too heavy growths are thinned out. Every sound tree trunk is sold to be cut in deals; every unsound one finds ready sale for fuel. If a river runs through a demesne several men are required for constantly beautifying its banks and keeping the poachers away from its fish. The roads and driveways of a fine demesne require very great attention. Then there is a master sawyer and his men for cutting posts, for repairing gates and fences There are painters, glaziers, carpenters, a number of whom are kept in service, and busy the year round. The head gardener requires several assistants. And, if a guest, your coachman's call of "Gate! gate!" will, in a ride about an ordinary estate, bring to the lodge gates at different entrances fully a half dozen bronzed old lodge-keepers from out of flower-embedded, ivy-covered lodges. Every one of these is an army "pensioner;" heroes bold, at their British army pension and £10 a year, whose lives fade out here in these shadowy nooks among the hares and pheasants with perhaps one gate call and a pot of beer a day to keep their scattering, useless wits together. In England servants are precisely what ten centuries of masters have wished them to be. English servants, in America, are miserable beings, giving the worst of service. They are outside of England; they have lost the pose and poise of their rock-rooted home regime, while they are bewildered by the eccentricities of many of our amateur nobility who import them, who will require some little time to accustom themselves to the attentions of any manner of servants.

EDGAR L. WAKEMAN.

ELECTRIC HEAT.—It is found that the "sparkling," visible when switches are turned on or off—to say nothing of that seen at dynamo brushes—will ignite the ordinary vapor given off by petroleum.

BICYCLE SCIENCE.

WHAT KEEPS THE WHEEL AND RIDER UPRIGHT?

Dr. Charles B. Warring, in a paper published in the *Popular Science Monthly*, says, in relation to the bicycle, that there is something weird, almost uncanny, in the noiseless rush of the 'cyclist as he comes into view, passes by, and disappears. We involuntarily ask, How is it possible for one, supported on so narrow a base, to keep his seat so securely, and seemingly so without effort? For an answer to this question I have searched somewhat widely, and while I have found articles on or about the bicycle, and what has been done by its riders, I have found none that offered a reasonable theory for its explanation. The only paper I found that claimed to explain the bicycle was one by Mr. C. Vernon Boys, delivered before a meeting of mechanical engineers and reported in "Nature," vol. xxix., page 478. Mr. Boys attempted to illustrate his subject by spinning a top. "The top revolves on its axis and it stays up; the wheel of the bicycle revolves on its axis and, therefore, it stays up," was the sum of his theory and demonstration. Of all machines none seem to be so little understood as the top and its near relation the gyroscope; but without going into the theory of their stability in motion, it is easy to show experimentally that their stability and that of the bicycle must be due to different principles. I spin on the table before you a top with a somewhat blunt point. You notice it runs around in a circular or rather a spiral path, and gradually rises to a perpendicular. I strike it quite a hard blow but do not upset it. I send it flying across the table or off to the floor, but still it maintains its upright position. You notice that when it is perpendicular it stands still; but if it leans ever so little it immediately begins to swing or gyrate around a vertical axis. I now change the top for one whose point is very fine, and well centred and sharp. You see it hardly travels at all. I now cause the point to fall into a slight pit in the surface of the table; it ceases to travel, but continues for a considerable time to swing around a vertical axis, and is remarkably stable whatever the angle at which it leans. Stopping its travelling has no effect upon its stability, but now I put my pencil before the axis and stop the gyration or swinging around. Immediately the power of staying up is gone, and the top falls. I may vary the experiment in every possible way; so long as the axis is inclined the result is the same—the moment the gyration ceases the top falls. In the case of the bicycle there is no gyrating around a vertical axis; yet gyration is absolutely essential to the effect which Mr. Boys thinks accounts for its stability. The gyroscope, or rather that form of it which Sir William Thompson calls a gyrostat, revolves around a vertical axis. If it leans a little it revolves slowly; if it leans much, it revolves faster. It will not fall to the table, though I push or strike it a hard blow. I now take it by the projecting wires and attempt to make it move in a straight course, as a bicycle does when it spins along the road; instantly it falls. We may then, I think, dismiss the top and gyroscope from further consideration. Others find in its going so fast the reason that the bicycle does not fall, but two forces acting at right angles to each other do not interfere. Now, in the case of a bicyclist, his forward motion is at right angles to gravity, hence does not in any way resist it; and, therefore, as it is gravity which causes him to tilt over on the side towards which he is leaning, the forward movement will not prevent his falling. Many think they find the counteracting influence in centrifugal force; but centrifugal force is impossible as long as the body moves in a straight line. So long as the bicyclist does not turn corners centrifugal force gives no assistance whatever; yet it may be thought that this force, if supplemented by skilful balancing, is sufficient. If the stability were due to balancing, it would not be difficult for a bicyclist to sit on his machine when not in motion. The ordinary bicyclist cannot do this, and yet, without apparent effort, he rides securely. That his stability is not due to his balancing and rapid forward motion combined, is evident, when we reflect that if the handles are made immovable, so that neither of the wheels can be turned to the right or left, it is impossible for any rider to keep from falling after he once begins to tilt. Some other explanation is needed; this I shall now attempt to give. Regarded mathematically as a machine for the application of force, the bicycle is a very simple affair. The weight is applied at the saddle, and is so great that the centre of gravity of the whole is very close to that point. The lines of force pass from the saddle to the points at which the two wheels touch the ground, and as a vertical line from the saddle falls between these two points, it is evident that the bicycle can neither tip forward nor backward; but in regard to side motion its equilibrium is very unstable, the least thing will upset it. Stability is secured by turning the wheel to the right or left, whichever way the leaning is, and thus keeping the point of support under the rider. Let us suppose a 'cyclist mounted on his wheel and riding towards the north. He finds himself beginning to tilt towards his right. He is now going not only north but east also. He turns the wheel eastward; the point of support must of necessity travel in the plane of the wheel, hence it at once begins to go eastward, and as it travels much faster it quickly gets under him, and the machine is again upright. Hence it is easy to understand that the faster the machine is travelling the easier it is to keep from falling. As regards headers, the higher the saddle the greater the danger, and the farther back the less the danger. The law of lateral safety—*i. e.*, against falling sidewise—is in one respect the reverse of the other, for the greater the height of the saddle the easier not to fall to either side, just as it is easier to keep upright on my finger a long stick than a short one.

VERY DEAR.—The most expensive drug known is physostigmine, two ounces of which cost nearly $2,000,000. It is a preparation from the calabar bean and is of use in eye diseases.

TRY IT.—Write down your age in years, double it, add to the product obtained the number 3738, take one-half of the sum, add 22 and deduct your age. The answer will invariably be the number of the current year. —*Arithmeticus.*

WOMEN WORKERS.—In Germany 5,500,000 women earn their living by industrial pursuits; in England, 4,000,000; in France, 3,750,000; in Austria Hungary about the same; and in America, including all occupations, over 2,7000,000.

IRON OR STEEL.—To ascertain whether an article is made of steel or iron pour on the object to be tested a drop of nitric acid 1.2 specific gravity, and after it has acted for one minute rinse with water. If iron, the spot will be of a whitish-gray color; if steel, it will appear as a black stain.

MIGHTY SHIP.—One of the latest additions to the British navy is the Blenheim, a protected cruiser of 9,000 tons displacement. Of this weight 4,000 tons are used for the protecting plates, armament, equipment, and coal. She is 375 feet long, 65 feet beam, 20,000 horse-power, and 22 knots speed. She is considered to be the largest, fastest, and most powerful war ship in the world.

BOLTLESS WHEEL.—In Europe steel-tired wheels for railroad cars are used more generally than in the United States. The difficulty here has been to secure a tire that can be placed in position without bolts. This obstacle has been overcome recently by the invention of a wheel that not only does away with bolts, but, at the same time, admits a steel tire that will wear much thinner than those ordinarily in use. This result is obtained by means of a peculiar fastener, which consists of a notched plate that is placed between the tire and the wheel. The alternate projections on the plate are then bent into a groove in the tire while the other projections are bent around the edge of the rim of the wheel. The tire is thus made perfectly stable, and it can be worn much thinner when thus fixed in position than by the old process of employing a simple flange for the same purpose.

A PITEOUS PLEA.

UGLY GIRLS DISCUSSED BY ONE OF THEMSELVES.

It does not matter much to a boy, whether he is good-looking or the reverse. He is not obliged to wait for somebody to ask him to dance, and his matrimonial prospects don't appear to suffer any serious discount from personal shortages that would send a girl's stock away down below par, or even put her out of the market altogether. One never sees a man so hideous or repulsive but that some woman is ready to marry him if he only will ask her; but men are less philanthropic, and so the ugly girls are left to run to waste as unappropriated blessings. The "handsome is as handsome does" theory wont hold at all after we get out of the nursery, and a little experience soon convinces us that it is a fraud and a delusion, like that other domestic fiction about the drumstick being the choicest part of of the fowl, with which our elders used to impose upon our unexpected simplicity. We ugly girls never get any ride in the Park, nor free seats at the theatre; and as for ice-cream and French candy, no matter how handsomely we deport ourselves, we shouldn't know the taste of either if we waited to have it bestowed upon us. Indeed, the expensiveness of being an ugly girl is one of the worst things about it. There are no perquisites. We get none of the plums out of life's pudding, for under present conditions men do all the carving, and, as one of them says, "All the fine things we think and say about women apply to those only who are tolerably good-looking or graceful." Now suppose the same rule applied to men, and that only the good-looking ones could hope to attain to wealth and distinction; suppose, for instance, that that famous wart on Oliver Cromwell's nose had been sufficient to condemn him to obscurity, as it inevitably would have done had he been a woman; suppose Grover Cleveland's too ample girth of waist had kept him out of the White House, as it certainly would have kept Mrs. Cleveland out, had she been the unlucky possessor of that inconvenient superfluity; or suppose David B. Hill's bald pate had rendered him ineligible to the office of Governor of New York, as I have not the shadow of a doubt that a bald head would render any women in America ineligible to the office of Governor's wife; suppose, in fact, that a bald head was sufficient to blast any man's prospects in life, as effectually as it would any woman's; I think most of the middle aged men, at least, into whose hands this paper may fall, will admit that that would be a little hard. Yet this is the law under which women have lived, since the beginning of time, and it doesn't give the ugly girls a fair chance. It is very possible for a man to be so hideous that a woman would not marry him (which, of course, it isn't), there are still dozens of careers open to him, in which a red nose or an apoplectic chin needn't stand in his way; but the ugly girl has no such resources. No matter how clever or amiable we may be (and some of us are really very adorable creatures, although you might not think so, to look at us), we cannot do anything but stand aside and see all the big matrimonial plums fall into the laps of our fairer sisters, while only the sour and wormy ones are left for us, and few even of them. Not only are we debarred forever from the glorious privilege of becoming known to fame as the spouse of some one of the army of statesmen, whose genius is making American legislation the wonder of the world, but we cannot even hope to deserve an eight-dollar pension from our country by becoming somebody's widow, which seems to be about the only service which can entitle woman to the gratitude of her country. In short, the ugly girl seems to have no rights which sociery is bound to respect. Now, we ugly girls think all this very unfair. We don't ask the men to marry us, nor hope to earn our country's gratitude by becoming widows, but let some modest standard, which one can hope to attain, be recognized. At all events, give us a respectable career of some sort. We have been allowed a few gleanings from the Tree of Knowledge, but the Tree of Life still stands in the midst of the garden with its fruit forbidden to us.—*April Lippincott's.*

CHEAPNESS NOT THE TRUE END.

PAY A REASONABLE PRICE FOR THE BEST YOU CAN AFFORD.

Men have their bad points, no doubt. We never studied them. But they certainly have one characteristic trait worthy to be commended and copied. I refer to the way they make purchases. Every one knows how women buy, and that no woman under the sun is ever satisfied with anything less than a "bargain." I really think this bargain hunting has produced a spirit of gambling and that women are responsible for the disgusting variety and outrageous number of shoddy goods, glass diamonds, pinchbeck ornaments and vulgar imitations and flaring cheats of all sorts that are placed upon the market to day. They have created a demand for bargains, and it is impossible to conceive of the manufactories turning out anything more absurd and unneeded than we already have. To a woman, a bargain means the purchase of something for half its price, or less. What is this but gambling? If the article is up to the standard, it must be worth a certain price; and if less is paid for it, either the thing itself is a cheat, or some one has lost by the transaction. Bargains are deleterious in another way; they cause, by their delusive cheapness, a careless and reckless expenditure and engender a spirit of dishonesty. This is the tendency, with an ever-increasing greed for more and greater bargains. Nearly all women agree that men are extravagant. Men will pay $7 for shoes, when $3 will buy a pair which "look just as well;" $5 for a hat, when a woman can "bunch up" her best Sunday hat for a dollar or two; and as for a man's clothes—why, one suit costs as much as a woman's three best dresses, bonnets thrown in. This does sound extravagant when you apply the "deadly parallel" to it; but if there is one thing I admire about a man, it is the decent and self-respecting price he pays for things. A woman goes out to buy a pair of shoes: she fritters away a whole day buying bargains which could not be resisted, and comes home loaded with them. But the shoes? Oh, yes, she has the shoes—bargains, also, of course. "Regular four-dollar boots," she will explain, with an accent of proud certainty. Then she exhibits her bargain laces, and her Summer goods bought in Winter, and stows them away with a smile of satisfaction, just as though there would come ere long a bargain famine. Again, she congratulates herself as she thrusts her dainty foot into the bargain boot. But see the result: the pretty looking shoes have lost their shape with a few wearings, and are beyond recognition in about half the time that the genuine four-dollar boots would have lasted. Then, when the young Summer has come, and every breeze which stirs the small green leaves suggests laces and draperies and all kinds of dainty, filmy, fluttering things, the other bargains are brought out. But they look so different now! They are out of style, or the windows are now full of newer, cheaper and prettier articles; and altogether she wishes she did not have them, and wonders why she ever bought them. I have seen well-to-do families of whom not a member ever appeared well dressed except the husband and father, and the reason was obvious—he bought his own clothes and eschewed bargains. I am glad that men stand their ground in this matter, and scorn a bargain counter; otherwise our homes might be hollow, and rickety, and cracked, and unreal, and cheap. The fact is, men become disgusted with so many bargains, from the half-price toilet soap to the wife's tawdry jewelry; and so when they go to buy, they simply ask for the worth of their money, and are willing to take somebody's word for it besides. When will women learn that it is always economy to buy the best? It lasts longer, is in better taste, and is in every way more satisfactory. It is childish to buy things just because they look well; children prefer tinsel to gold if it glitters more, but women are supposed to have put away such infantile ideas. I trust that the day is not far distant when our women will realize that it lessens their dignity and self-respect to wear imitations, just because they happen to be a freak of fashion and cheap. It is essentially vulgar. The craze for bargains, moreover, is dishonest in principle, and children brought up in such an atmosphere cannot have true conceptions of taste or appreciation for the best things. "'Tis true, 'tis pity, and pity 'tis *'tis* true"—that they will be compelled to learn better of their fathers. This is the safest rule: Buy the best you can afford, paying a good, decent, reasonable price, and then take the best care of it. For this is the secret of economy, after all—not what you make or pay, but what you save and take care of. —*Kate Field's Washington.*

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

April.

MEAT.—Beef, lamb, mutton, ham, kidneys, liver, sausage, veal.

GAME AND POULTRY.—Brant, pigeon, chicken, duck, turkey, goose, snipe.

FISH.—Anchovy, bass, cod, snipe, eels, carp, catfish, flounders, halibut, herring, lobsters, mackerel, mussels, oysters, perch, rock-fish, salmon, smelt, white-fish, trout, sturgeon.

VEGETABLES.—Artichokes, beans, carrots, celery, garlic, lettuce, onions, parsley, parsnips, potatoes, shallots, spinach, turnips, watercress, radish, rhubarb, sea kale.

PRACTICAL RECIPES.

SPRING SOUP.—Make some good broth from a mutton bone, cooked down with pepper, salt and two or three celery stalks. Take a pint and a half of this, strain it and add two tablespoonfuls of flour rubbed smooth in a little milk, a well beaten egg and a teacupful of milk, also more salt and pepper if it is needed. Cook these ingredients in the broth for a moment, then add a small cupful of finely chopped parsley, two teaspoonfuls of chopped mint and a few very thin slices of lemon. Serve very hot.

POTATO CURRY.—Cut some raw potatoes into dice and sprinkle them freely with curry powder; have some butter melted in a frying pan, put the potatoes into this and toss them about until half cooked, then pour over them some gravy or soup and stew until tender. Serve very hot.

MUSHROOM TOAST.—Skin and clean some fresh mushrooms and stew them with a good lump of butter, three cloves, pepper and salt, a small onion and a small bunch of parsley and summer savory, and three teaspoonfuls of lemon juice, dust a little flour over them and add a very little water; when they are cooked nearly dry add a teacupful of veal gravy or cream, and cook eight or ten minutes longer. Make some thin slices of toast and butter them, lay them on a platter; thicken the mushroom sauce with one or two eggs and pour it over the toast.

OYSTER PATTIES.—Remove the tough part from twenty-five small oysters. Chop up one-half cup of mushrooms and one-quarter cup cooked brains. Put two teaspoonfuls of butter in a sauce pan, and when it is melted add a tablespoonful of flour, cook for a few

minutes stirring constantly; add one-half cup of cream and one-half cup chicken broth or good white stock, or if more convenient use a cupful of cream instead of the broth or stock. Cook this, stirring constantly until it is smooth and free from lumps, then add to it the mushrooms, brains, and oysters, season with salt and pepper. Have ready some puff paste patty-shells, make them very hot then fill with the mixture, set them in the oven for a moment then serve.

DEVILED ALMONDS.—Blanch and dry some Jordan almonds and fry them until they are nicely browned in butter, then put them into a sieve and sprinkle them with a mixture of two-thirds cayenne pepper and one-third salt, shake them about so that they get an even amount of the seasonings. They may be eaten hot.

TO BLANCH NUTS.—Put some water over the fire in a sauce pan with a pinch of salt. When it boils throw in the shelled nuts, let them remain a little more than a minute then put them in a sieve, pour cold water on them and slip the loose skins off.

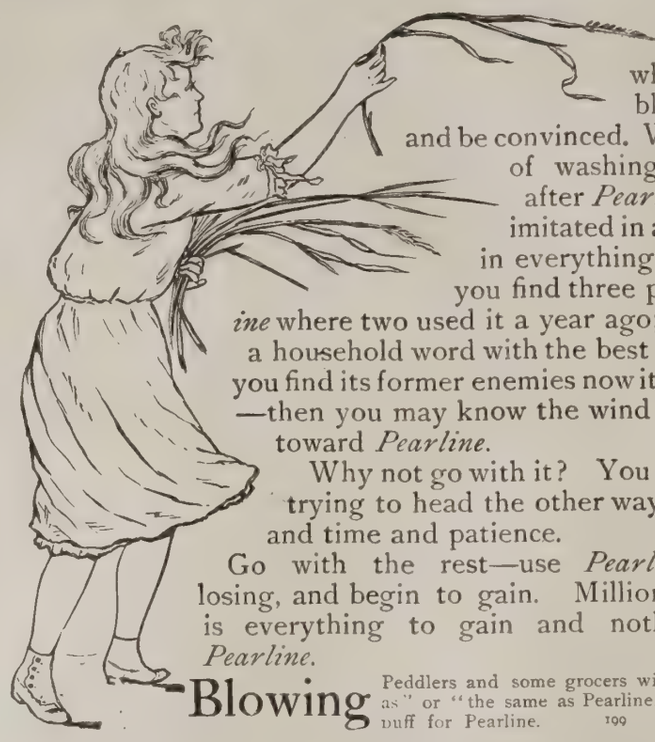
LEFT OVER SPINACH.—Take the cold spinach and if there are any slices of egg left over use them also, if not add a hard boiled egg; chop the egg and spinach well together and fry them for a few minutes in butter. Serve very hot, add seasoning of salt and pepper if needed.

DINERS AND DINING.

HOW TO PROMOTE DIGESTION AND PROLONG LIFE.

It has been said recently that Gladstone, the English statesman, lays stress upon his habits of eating as one secret of his extraordinary vitality, and capacity for hard work at a time of life when most men, fortunate enough to be still in the flesh, are thinking of nothing but their ailments. Mr. Gladstone confided to an interviewer that not only what he ate but how he ate was of vast importance to his comfort and health. He loved good living, but he had so trained his taste that food which experience had taught him was hurtful became positively distasteful to him. He was not fond of gastronomic experiments. He held fast to the dishes he knew—good roast beef and mutton, bread and potatoes, with a mug of ale or some light claret. He wanted no highly spiced food, no pastries, no elaborate menus requiring foreign cooks for their preparation. Next to simplicity in food the greatest Englishman of his day believes in thorough mastication, saying that he chews every mouthful with systematic thoroughness. He made long ago some experiments in "bolting" one meal and then masticating the next properly, the results showing that the immediate effects of hasty eating, to say nothing of permanent injury to the stomach, were quite remarkable. One hour after a bolted meal, even of the best material—say roast beef, baked potatoes, bread and ale—the mind refused to work without urging; the body was uneasy, and remained so for hours; small difficulties were magnified, and all the symptoms of dyspepsia in a mild form were present. On the other hand, Mr. Gladstone found that the same dinner properly eaten, with due deliberation and much mastication, produced exactly opposite results; an hour after the meal any kind of work was a pleasure. In the same fashion he experimented with various kinds of food, arriving at the conclusion that food is less responsible for a disordered stomach than the manner in which it is eaten. He noted minutely the effect of a simple dinner well eaten, and then of a rich dinner of improper food equally well eaten. There was bodily discomfort and mental inertia after the improper food properly eaten, but in no such degree as was noted when proper food was "bolted." As to bolting improper food, Mr. Gladstone had too much consideration for his stomach to put it to such a test. It is notorious that much more depends on how we eat than most people imagine. Simple food, and the practice of chewing each mouthful forty times, as Mr. Gladstone is said to do, may not make Gladstones of us all, but it may enable us to do our daily work with less labor, and tinge with content the dreariest of outlooks. The French are said to be the light-hearted people of Europe—the gay French, they are called—and the elastic fashion in which they recovered from the Franco-German War was the wonder and admiration of the world. Perhaps the care given to cooking and eating had much to do with it. I once knew an old French lady who, at the end of her first boarding-house dinner in this New World, burst into tears with the remark that an existence of dinners without soup, wine or coffee was not worth living. She could not understand that people could either work or play properly when dinner was thus shorn of its best features. It sounds trite to say that the simplest meal can be made gastronomically effective by intelligent taste and care. In any manufacturing establishment the boiler room is the object of the utmost care; the fuel, the manner in which it is used, are matters of importance, for upon the fires depend the power to which the whole building looks for effective work. Food is our fuel, and the stomach is the furnace in which we use it. How long would a boiler do its work if fed with the same haphazard recklessness we show in maintaining the human fire? It was the excellent Dr. Kitchener, the author of the "The Cook's Oracle," who first declared that none but a hungry waiter could appreciate the importance of having the plates warm and the wine cool. Little niceties of dining are apt to be regarded with absolute indifference by a man who has dined well and feels that he never cares to dine again. The hungry waiter will feel for the hungry man whom he serves. Upon the other hand, I have heard it argued that only the man who has dined can serve a dinner with proper repose. The hungry waiter may be excited by the good things before him to hurry the meal in an unseemly fashion, and hurry, or the semblance of hurry, is fatal to a dinner. A waiter who whisks on and off the courses is a sinner against gastronomic law; everything pertaining to dinner should be done as if time was made for dining. According to an old gentleman with a face reddened by the fires of many kitchens, with civilization in New York came the French cooks, or, as he would probably put it, with the French cooks came civilization. When, therefore, it is considered that this country has nearly 600 cooks who are members of the Société Culinare, volumes are spoken for the civilization of the country. The Société is organized to maintain an esprit de corps among its members. A chef is not allowed to do certain things. For instance, he must refuse to sacrifice his art to any such consideration as economy. If some great light of the profession has invented a dish requiring 20 dozen yolks of eggs, his colleague must not attempt to concoct the same dish with 19 dozen, and thereby risk spoiling the other master's reputation. One of our famous club chefs who refused to do this sort of thing and threw up his situation, was voted a medal by the Société and had a new kind of tart named after him. The gentleman in question was inclined to attribute the degeneration of cooking from the days of Brillat-Savérin to the fact that the great hotels of Europe and this country now pay the salaries which attract the lights of the profession, and yet economy must be studied in cooking for a hotel. The cook loses tone when he has to study economy. We have heard a great deal of recent years of the enormous sums paid by American millionaires for their cooks; the generation seems to be in danger of forgetting that it takes more than money to make a perfect meal. That some of the simplest dinners are the best is well known. Dr. Kitchener was never tired of telling his friends that money was the least essential in the preparation of a really good dinner. Some people may have imagined that Kitchener was the nom de plume of some serious gourmand who lived to eat. On the contrary, Dr. Kitchener was a very real personage in his time—a gourmet, a wit, a musician, and a man of science, who believed that eating and cooking should be ranked among the fine arts. William Kitchener was educated at Eton. His father was a London coal merchant, who amassed a fortune and left his son a competence. The son's character was eccentric in no common degree, but underneath his oddities there was a basis of good sense. His wife, it is true, quarrelled with him and left him. Having to attend to his own domestic arrangements, and being somewhat of a bon vivant, he assumed the direction of his kitchen, and superintended the preparation of his food in person. There may have been a special reason for this. In one of his books he confesses to an extraordinary love of animal food, which may have been the result of disease, although we hear of no such stories as are told of Dr. Johnson's appetite, and of that veal pie, well stuffed with plums, which was wont to produce such spasms of gluttony in the great lexicographer Dr. Kitchener rose at a stated hour and went down to breakfast at 8.30, took luncheon at noon, dined at 5, supped at 9.30 and went to bed at 11. Breakfast was light but nourishing. Luncheon was a more substantial meal—savory patés, potted meats of various kinds, fried and broiled fish, grills, cutlets and entrées, together with sound wine and excellent coffee and liqueurs, made up the mid-day repast. A 5 o'clock dinner, arranged according to the precepts set forth in Dr. Kitchener's famous book, led up to the comfortable supper which brought the well-spent day to a close. It must not be imagined that so much eating and drinking resulted in selfishness. The good doctor delighted in hospitality. When he gave a dinner party the guests were invited for 5 o'clock, and at five minutes past that hour the street door was locked and the key laid upon the dinner table. For many years he gave a dinner every Tuesday evening, and on these occasions a placard was suspended over the chimney-piece with the inscription: "Come at 7—go at 11." Tradition says that George Colman the younger once inserted the word "it" after the "go." Oysters, of course, began the doctor's meal. "Delicate little creatures, he exclaims in a letter, "they are as exquisite in their own taste as in that of others. Common people," he tells us, "are indifferent about the manner of opening oysters, and the time of eating them after they are opened. Nothing, however, is more important, in the enlightened eyes of the experienced oyster eater. Those who wish to enjoy this delicious restorative in its utmost perfection must eat it at the moment it is opened, with its own gravy in the under shell. "If not eaten while absolutely alive, its flavor and spirit are lost. The true lover of an oyster will have some regard for the feelings of his little favorite, and will never abandon it to the mercy of a bungling operator, but will open it himself and contrive to detach the fish from the shell so dexterously that the oyster is hardly conscious he has been ejected from his lodgings till he feels the teeth of the piscivorous gourmand tickling him to death." This is almost as attractive a picture as that of Piscator, in the "Complete Angler," impaling the worm on the hook "as if he loved him." In the way of extravagant menus the writer has some from Paris and some from New York. One of the Paris menus appeared in *Figaro*, and was for a dinner costing 103 francs, or $21, at the Café Anglais, of which sum 45 francs was for wine. As against this modest repast the following extravagant and extraordinary mixture was proposed by a New York chef as something which a millionaire might eat, pay for, and—live: Sherry cocktail, 30 cents; oysters on half shell, 50 cents; Yquem Créme de Téte, $8; green turtle soup 75 cents; half bottle Ashburton sherry, 1840. $3; Alose à la Maréchale, $2.50; Steinberg Kaiser wein, $10.50; cucumbers, $1; croustades de truffes, $4; lamb, mint sauce, $10; little peas, $1.25; champagne, $4; ris de veau à la Choiseuil, $2; terrapins au madere, $4; sorbet, $1; cigarettes, 25 cents; chaud-froid d'alouettes, $5; Château Lafitte, 1865, $6; faisan d'Angleterre, $10; Clos Vougeot, $10; chicoré salade, 50 cents; old port, $2.50; glacé Nesselrode, $1; Madeira, 1834. $7; strawberries, $5; grapes, $4; café, 25 cents; poussé café, 40 cents; cognac, 40 cents; cigars, $1.50; flowers, $7; decorated menu, $5; total, $109.50. To go back to simplicity. It has often been asked how eating could be made profitable to mind and body when the larder contained but little

meat and no costly trimmings. A diet of oatmeal and vegetables is profitable if it permits people to obtain a country life, plenty of sunshine, leisure, books, and a wood fire. Here again I believe that a little intelligent work in the kitchen will result in making much out of little. Soups cost next to nothing. The French peasant thrives upon what our American housewives throw away. There are a dozen little books published which show how good living may be obtained at small money cost; intelligence is the one essential. Bronson Alcott was responsible for many of the dietetic vagaries supposed to accompany intellectual activity of the transcendental type. He followed out his vegetarian precepts at Fruitlands, accepting only such vegetables as grew upward, rejecting potatoes, beets, carrots as unclean, and taking cabbages, tomatoes and fruits. Alcott would allow no manure on the fields of Fruitlands, denouncing its use as a wicked forcing of nature, from which we may infer that the cabbages were poor. No wonder that members of the devoted band now and then, in moments of weakness, appealed to the neighboring farmers for a good meal of meat, bread and potatoes. Not even Alcott's curious device of baking his loaves in fantastic shapes of animals and birds could entirely satisfy his disciples.—*Recorder.*



Straws show which way the wind blows. Watch them—and be convinced. When you see all sorts of washing powders patterned after *Pearline;* when you see it imitated in appearance, in name, in everything except merit; when you find three persons using *Pearline* where two used it a year ago; when you hear it as a household word with the best housekeepers; when you find its former enemies now its staunchest friends;—then you may know the wind is taking you along toward *Pearline.*

Why not go with it? You are losing money by trying to head the other way; money, and labor, and time and patience.

Go with the rest—use *Pearline*—and you stop losing, and begin to gain. Millions realize that there is everything to gain and nothing to lose—with *Pearline.*

Blowing Peddlers and some grocers will tell you, "this is as good as" or "the same as Pearline." IT'S FALSE—but what a puff for Pearline. 199 JAMES PYLE, New York.

MAP MOUNTING.

HOW TO GIVE DRAWINGS A CLOTH BACKING.

A Washington correspondent of the *Scientific American* gives the follwing practical advice: To begin with, a paste of good quality is required. When paste is made at home, trouble often arises from scorching, or from the addition of too much water. Thoroughly made paste, when spread on paper, will not strike through, but will remain on the surface, like butter on a piece of bread. To enable the paste to keep for several months in a cool place, add dissolved alum as a preservative, in the proportion of a tablespoonful of pulverized alum in two quarts of warm or hot water. Put the water in a tin pail that will hold six or eight quarts, as the flour, of which the paste is made, expands greatly while it is boiling. As soon as the water has cooled, stir in good rye or wheat flour until the liquid has the consistency of cream. Beat thoroughly with a paddle-shaped stick, and see that every lump is crushed before placing the vessel over the fire. Care should be exercised to have the water cool before adding the flour, otherwise the paste will be lumpy. To prevent scorching the paste, place on the fire a pot or kettle partly filled with water, and set the pail containing the paste material in the water, permitting the bottom to rest on a few large pebbles to prevent excessive heat. Of course, a "farina kettle," or "double boiler," is better, and will be less troublesome to handle, but the "ruling element" of the kitchen will not always permit its use. Add a teaspoonful of powdered resin, a few cloves tied to a cloth, so that they will flavor and not discolor the paste, let it cook until it asumes the consistency of "mush," then, if any lumps appear, strain through a sieve Keep in a tight jar, and if it becomes too thick after standing, put the quantity required in a suitable dish, and thin by adding cold water and stirring thoroughly. So much for the paste. Now let us proceed to the mounting. Cut the cloth from one to two inches larger all around than the drawing or paper to be mounted. Lay it on a drawing board or table, dampen well with a sponge, stretch lightly, and tack down; use small tacks, and place them four or five inches apart, or closer, if necessary. Leave it for a moment, and while its surface is evaporating and absorbing the surplus dampness, lay the drawing, map, or paper to be mounted face downward on another table, and dampen the back with a wet sponge. Returning to the cloth, with a brush (a large, round, fine-haired paint brush is best) lay the paste on evenly and smoothly, and then, after the surface is well covered, take the brush and beat the paste thoroughly into the pores of the cloth. After this is done, smooth the surface nicely. Take up the paper by the corners, and, if the thickness of the paper seems to require it, apply the sponge again. The paper should be limp, but not wet. If it is not well prepared, my experience has been that the surface will "blister," particularly on large drawings, for the paste adheres much better to a damp surface than to a dry one. At this stage it is best to obtain some assistance. Have your assistant grasp two of the corners of the drawing or paper while you manage the others, holding the paper suspended horizontally a few inches above the cloth. When it is in the right position place your end on the paste-covered cloth, while your assistant still holds his end up. Place a piece of clean paper on top to prevent smearing the sheet and with the hands brush quickly from the middle of the end toward both sides, working constantly toward your assistant as he slowly lowers the paper to the cloth. Rapid manipulation is necessary to insure perfect contact and a smooth surface. Should any "blisters" develop, rub them briskly with the bone handle of an eraser or any similar substance. Small indulations will disappear when the cloth dries. Stand the board aside with the cloth tacked to it, and allow to dry thoroughly, then cut off as required. Ordinary bleached cotton cloth or sheeting makes a good backing for small sheets, while large ones are best mounted on a heavy grade of unbleached material. These directions are general, and have been found to work well in practice. Individual experience can alone, however, determine many of the details. Other paste than that described may be used if desired, though it is doubted whether a better can be obtained. Should any of your readers know of a better method, many would doubtless be glad to hear of it.

A BEAUTIFUL COMPLEXION.

If the face of a beautiful women or a young child be scrutinized through a magnifying glass, it will be found to be covered by a fine thin skin of considerable uniformity and translucency. At the temple just below the cheek bones and under the chin and jaw it is the thinnest and cleanest. It is smooth and soft. Here and there small fine hairs proceed from delicate cells. These are invisible to the naked eye or else are recognized as down. At frequent intervals are minute pores whose edges are generally moist and delicate glands containing the smallest quantity of thin oil. There are also cells in which future hairs are to grow, half-formed lines and creases produced by the ceaseless play of the muscles of the face and occasionally dark spots, where the blood has failed to carry away either its own humors or the debris resulting from the wear and tear of the tissues. Just below the outer skin can be seen the true skin although it is faint and but partially visible. On its surface can be dimly discerned tiny veins or capillaries, lymph-vessels, nerve-tips, pores and glands. If the face of an unhealthy person with a bad complexion be next examined, a similar and yet an entirely different state of facts will be found to exist. The skin is no longer fine, but coarse and irregular. At some points it will be thick and still further thickened by patches of dead skin, while at others it will be as thin as almost raw. At different places its translucency will be destroyed by deposits of humor or debris, or by dried cells from the circulation, or from discolored elements from the kidneys and liver, which should have been eliminated from the system. The hair cells are swollen and in some there is dirt from without. The pores are clogged; in some instances with exudations from within, and in others with dust from the atmosphere. Some are abnormally enlarged by over-use and others closed up from non-use. The glands are in a still worse condition. All are marked by the unnatural presence of dirt of some sort. This may come from within or without and may produce a simple enlarged interior or on the other hand may create an intense local irritation and inflammation. Frequently it goes farther and expresses itself in suppuration. These various stages in ordinary language are termed blotches, rashes, blackheads, pimples, comedones, cat-boils, boils and ulcers. In the true skin beneath the outer skin, things are equally bad. The capillaries are engorged, the lymph-vessels are swollen and sluggish, and the tissues in every direction are discolored and often disorganized. This difference so vast between the face of perfect health and that of sickness is due entirely to the difference in the condition of the blood. Purify the blood and in a short time the differences disappear and the fine complexion of physical well-being returns. To effect this change is not so difficult as may be supposed. All that is necessary is to take a course of warm baths for the exterior of the body and Ayer's sarsaparilla for the interior. This magnificent preparation is not a drug nor a "cure-all," but merely a scientific blood-purifier. Used according

Indigestion

Horsford's Acid Phosphate.

A preparation of phosphoric acid and the phosphates required for perfect digestion. It promotes digestion without injury, and thereby relieves those diseases arising from a disordered stomach.

Dr. E. J. WILLIAMSON, St. Louis, Mo., says: "Marked beneficial results in imperfect digestion."

Dr. W. W. SCOFIELD, Dalton, Mass., says: "It promotes digestion and overcomes acid stomach."

Dr. F. G. McGAVOCK, McGavock, Ark., says: "It acts beneficially in obstinate indigestion."

Descriptive pamphlet free.

RUMFORD CHEMICAL WORKS,
PROVIDENCE, R. I.

BEWARE OF SUBSTITUTES AND IMITATIONS.

Caution:—Be sure the word "Horsford's" is *printed* on the label. All others are spurious. Never sold in bulk.

Fine Table Wines

From our Celebrated Orleans Vineyard.

Arpad Haraszthy & Co.

Producers of the

ECLIPSE CHAMPAGNE,

530 Washington St. SAN FRANCISCO.

GENERAL AGENCIES:

NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOSEPH R. PEEBLES' SONS CO., 73 West Fourth Street
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.

to common-sense, it expels all humors, first from the circulation, then from the deeper tissues of the body, and finally, from the skin of face and body alike. The various parts return to their normal state and, in a short time, the unhappy victim of careless living is restored to health and his or her complexion assumes that charm and beauty which represents a perfect hygienic condition within.

MICA MINES.—Mica, which stands unique among minerals as an insulating substance, is destined to become one of Connecticut's leading products. Three new mines have recently been discovered in that State.

ESSENTIAL.—Grip—I always pay as I go. Sack—So do I. It's the only way I can get my baggage.

SHOCKING CRIMINALS.—The authorities of the Ohio penitentiary have been using an electric shock for the purpose of punishing inmates. A legislative committee investigated, but did not find that any atrocities had been committed.

MEDICAL CONVENTION.—The Forty-second Session of the American Medical Association will be held in Washington, D. C., on Tuesday, Wednesday, Thursday and Friday, May 5th, 6th, 7th and 8th, commencing on Tuesday at 11 o'clock, a. m.

ROUGH ON ROWDIES.—One of the latest proposed applications of electricity is a policeman's club that contains a galvanic battery. When the rowdy seizes the club, thinking to wrest it from the policeman, the rowdy receives an electric shock, which astonishes and paralyzes him, rendering his capture easy.

CHANGED DATE.—The National Association of Railway Surgeons will convene at Buffalo, N. Y., Thursday, April 30, 1891. This is a change of one week from the time previously announced, the change having been made so as not to conflict with the dates covered by the meeting of the American Medical Association.

LONDON FIRES.—The quantity of water used for extinguishing fires in London during the year 1890 was between 20,000,000 and 21,000,000 gallons, or about 92,000 tons. Of this quantity about 8,000,000 or about 40 per cent. of the whole, was taken from the river, canals, and docks, and the remainder from the street pipes.

A GOOD MOVEMENT.—A movement has been started to honor the late Captain James B. Eads, by erecting in the city of St. Louis, Mo., a fitting monument commemorative to the life work of the great engineer. The Eads Monument Association, with headquarters at St. Louis, has been organized, and subscription blanks have been sent out to engineering societies in different parts of the country.

HARDENING STONE.—Soft oolitic limestone or limestone with spherical granules, is now hardened into marble by treatment with a certain chemical solution, which gives the stone a thick, strong skin about half an inch deep, capable of a fine polish. Soft oolitic can thus be worked into any form and hardened afterward. The marble becomes impervious to damp and atmospheric influences.

A DOLLAR MARK.—There is a popular idea prevalent that the minute letter "M" to be seen at the base of Liberty on the face of the present issue of silver dollars stands for "Mint," and is an evidence of the genuineness of the coin bearing it. This is a mistake, says the Philadelphia *Record*. The "M" stands for Morgan, George T. Morgan, who is the originator of the design. Upon the same side there is another "M," also the initial of the designer. This is to be found in the waving locks of the fair goddess, and is so cleverly concealed in the lines of the design that it can only be seen after a long scrutinity. A prominent mint official, in speaking of this other initial, said he had it shown to him scores of times, but could never find it unassisted.

DETECTIVE! WE WANT A MAN IN every **locality** to act as **Private Detective** under our instructions. Send stamp for particulars.
WASHINGTON DETECTIVE AGENCY,
Box 787. Washington, Iowa.

Household Economy.

"One even teaspoonful of **Cleveland's Baking Powder** will accomplish as much or more than a heaping teaspoonful of any other powder."

Sarah T. Rorer

Principal Philadelphia Cooking School.

25 CTS. PISO'S CURE FOR CURES WHERE ALL ELSE FAILS. Best Cough Syrup. Tastes good. Use in time. Sold by druggists. CONSUMPTION 25 CTS.



A HIGH-GRADE PIANO

AT A VERY MODERATE PRICE.

NEW DESIGNS. FANCY WOODS.

Terms Easy. + Monthly Instalments.

TWO, THREE AND FOUR PEDALS.

Catalogues, Prices, Terms, Etc., sent to any address.

EVERY PIANO WARRANTED 5 YEARS.

(Mention this Paper.)

THE ORIGINAL AND GENUINE (WORCESTERSHIRE SAUCE).



LEA & PERRINS' SAUCE

In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—

Lea & Perrins

Beware of Imitations; see that you get Lea & Perrins'

For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS, NEW YORK.

THE N. Y. HAY EXCHANGE BULLETIN.

OFFICIAL REPORT OF THE HAY AND STRAW MARKET AT NEW YORK.

COMMISSION SALESMEN.

NOTICE.

These names are arranged alphabetically.

WM. AFFLECK & CO.,
Commission Merchants in
HAY AND STRAW,
Office No. 5,
N. Y. Hay Exchange Building.

J. ALSDORF,
Commission Dealer in
HAY AND STRAW,
33d Street and 11th Ave.,
NEW YORK.

E. A. DECKER. F. W. TOMPKINS.
DECKER & TOMPKINS,
Commission Merchants in
HAY, STRAW, GRAIN,
Office: 16 New York Hay Exchange Building.

L. S. DILLENBACK. T. O. PECK.
DILLENBACK & PECK,
MAIN OFFICE:
Room 0, N. Y. HAY EXCHANGE, N. Y. City.
STOREHOUSE AND BRANCH OFFICE.
101, 103 and 105 North 5th St.,
and 152 and 154 Berry St.,
Palmer's Dock. Brooklyn, E. D.

EDWIN B. DUSENBERRY,
COMMISSION MERCHANT,
And Wholesale Dealer in
HAY, STRAW AND GRAIN.
No. 1, N. Y. Hay Exchange, New York.

THOS. FONDA & CO.,
Commission Merchants
And Dealers in Hay, Straw, Grain and Country Produce,
13 & 14 N. Y. Hay Exchange Building.

N. A. FULLER,
COMMISSION MERCHANT IN
HAY AND STRAW,
33d Street and 11th Ave.,
NEW YORK.

J. H. Hubbel. Oscar Kent.
HUBBEL & KENT,
HAY AND STRAW
COMMISSION MERCHANTS,
New York Hay Exchange Building.
Personal attention guaranteed all consignments
Correspondence solicited.

THEO. P. HUFFMAN & CO.,
COMMISSION MERCHANTS
In Hay, Straw, Grain, Feed, &c.,
648 & 650 West 34th Street,
Bet. 11th & 12th Aves., N. Y.

The N. Y. Hay Exchange is located at 601 W. 33d St., corner 11th Avenue.

Only the cards of members of the N. Y. Hay Exchange appear on this page.

RULES FOR GRADING HAY AND STRAW

As Adopted by the N. Y. Hay Exchange.

CHOICE OR PRIME HAY—Shall be pure timothy, properly cured, bright, natural color, sound and well baled. No. 1—Shall be timothy, not more than one-eighth (⅛) mixed with "red top" properly cured, bright natural color, sound and well baled. No. 2—Shall be timothy, not more than one-quarter (¼) mixed with red top and blue grass, properly cured, good color, sound and well baled. No. 3—Shall include all timothy not good enough for No. 2, proportionately mixed with blue grass, red top, and clover, sound and well baled. SHIPPING—Shall include all hay not good enough for other grades, and may be natural meadow, free from wild or bog grass, and must not contain over one-third (⅓) clover, sound and well baled. CLOVER MIXED—Shall include all hay containing not over two-third (⅔) clover, and one-third (⅓) timothy, properly cured, sound, and well baled. CLOVER—Shall be medium grown, properly cured, good color, sound, and well baled. NO GRADE OR REJECTED HAY—Shall include all hay badly cured, musty, stained, or in any way unsound.

No. 1. RYE STRAW—Shall be clean, bright, long Rye, in bundles, sound, well and securely baled. No. 2—Shall be long Rye, in bundles, sound, well and securely baled. SHORT RYE—Shall be clean, not bundled, sound, well and securely baled. OAT STRAW—Shall be clean, bright, sound, well and securely baled.

In the New York market bale-wood is weighed in without tare. In all other markets it is deducted.

These quotations for choice, No. 1 and No. 2 hay are for large bales. 5c. per cwt. less when in perpetual press bales.

The New York quotations are per cwt. At other points, per ton.

NEW YORK, April 27, 1891.

The following are the market prices to-day at New York

	Large Bales.	Small Bales.
Fancy Hay	65c @ 70	60 @ 65
No. 1	60 @	55 @ 60
No. 2	50 @ 55	50 @ 55
No. 3 and Shipping	40 @ 45	40 @ 45
Clover Mixed	45 @ 50	45 @ 50
Clover	40 @ 45	40 @ 45
Long Rye Straw	80 @ 85	45 @ 50
No. 2 "		
Oat Straw	35 @ 40	35 @ 45
Wheat Straw	40 @ 45	

Receipts week ending April 25, as follows:

Via N. Y. Central	144 cars.
" West Shore	105 "
Other roads by Lighter, 34th Street	115 "
Total	364 cars.

The receipts by rail have continued light, but the river barges have brought forward considerable hay, thereby preventing any advance in prices. Common and medium grades are plenty, while prime or fancy hay in large bales is meeting ready sales at 65 to 70 cents.

Perpetual pressed bales of medium and common qualities have accumulated owing to small shipments of cattle, and therefore sales have been forced in order to unload cars, as all roads, except the New York Central and West Shore, are threatening the enforcement of demurage charges.

H. B. Jenkins. F. S. Williams.
JENKINS & WILLIAMS.
COMMISSION MERCHANTS IN
HAY, STRAW AND GRAIN,
HAY EXCHANGE.

JOHN KERWIN & SON,
DIRECT RECEIVERS OF
HAY, GRAIN and GENERAL PRODUCE
DEPOT AND STOREHOUSES,
Palmer's Dock, Nos. 97 & 99 North Fifth Street.
BROOKLYN, N. Y.
SHIPPING ADDRESS, PALMER'S DOCK, BROOKLYN, N Y
West Shore R. R., N Y. C. & H. R R R., N Y L. E. & W. R. R., Pennsylvania R. R., D. L & W R. R., Lehigh Valley R. R., and connections.

W. J. OVEROCKER. PERRY HATCH.
OVEROCKER & HATCH,
Commission Merchants in
HAY, STRAW AND GRAIN
33d Street & 11th Avenue, New York.
References: West Side Bank, New York City; Exchange Bank, Holly, N. Y.

Gilbert Plowman, NEW YORK. Spencer Billington, FORT HUNTER, N. Y.
PLOWMAN & BILLINGTON
COMMISSION MERCHANTS,
HAY, STRAW, GRAIN, &c.
No. 15 N. Y. Hay Exchange,
33d St. & 11th Ave., NEW YORK.

JAMES ROZELL & SON,
Commission Merchants and Wholesale Dealers in
HAY, STRAW, GRAIN AND COUNTRY PRODUCE.
N. Y. Hay Exchange, New York.

SKINNER, BLOOM & CO.,
Successors to Rogers, Skinner & Co.,
COMMISSION MERCHANTS
And Dealers in
Grain, Flour, Hay, Feed, Meal, &c.,
74 CORTLANDT STREET, - NEW YORK.
Barge GYPSIE, Foot Bridge St., Brooklyn.

H. SLINGERLAND,
Barges MERCHANT and HARVEST QUEEN
Foot of West 11th Street,
HAY AND STRAW.
Also, 33d and 35th Streets, and all Railroad terminals. Special facilities for lighterage free goods.

CHARLES F. SWAN,
Commission Merchant in
HAY, STRAW & GRAIN,
At all the Railroad Terminals in New York, Brooklyn, Jersey City, &c.
MAIN OFFICE,
108 BROAD ST., NEW YORK.

TITUS, WELLS & WILLETS,
Commission Merchants and Dealers in
HAY AND STRAW,
133 Roosevelt St.,
NEW YORK.

G. E. Van Vorst. James M. Hillery.
VAN VORST & CO.,
COMMISSION MERCHANTS,
HAY, STRAW AND GRAIN
N. Y. Hay Exchange, 33d St., & 11th Ave.
562 & 564 West 34th St., NEW YORK.

NOTICE.

These names are arranged alphabetically.

HOSMER, CRAMPTON & HAMMOND,

NO. 43 COMMERCIAL STREET,

BOSTON.

COMMISSION MERCHANTS,

HAY, STRAW, FLOUR & GRAIN.

E. B. HOSMER, G. W. CRAMPTON, BENJAMIN HAMMOND, A. L. ROBINSON.

BOSTON HAY AND STRAW MARKET.

Hay, choice to fancy, in large bales	$13.50 to $14.50
Hay, choice to fancy, perpetual pressed bales	13.00 to 13.50
Hay, fair to good	11.00 to 12.50
Hay, poor to ordinary	9.00 to 11.00
Hay, Clover and Clover mixed	10.00 to 11.00
Hay, swale	8.00 to 8.50
Straw, Rye, good to prime	17.00 to 17.50
Straw, Oat	8.00 to

BOSTON, April 25th, 1891.

Receipts for the week are 258 cars of Hay and 18 cars of Straw; corresponding week last year, 171 cars of Hay and 23 cars of Straw. The receipts of hay are quite liberal while the demand is rather quiet. We quote the market barely steady at quotations.

Some winter pressed hay is coming out in a more or less heated and damaged condition; such is only salable at low prices. Rye straw is quiet with larger receipts. Oat straw very dull.

H. F. WILSON,
WIRE BALE TIES,
458 WEST 38th STREET, New York.

THURSTON'S IVORY PEARL TOOTH POWDER
WILL KEEP THE TEETH IN PERFECT CONDITION AND THE GUMS HEALTHY.
Price 25 & 50 Cents PER BOTTLE.

NATURAL MINERAL PURGATIVE WATER.
From the Springs of
VILLACABRAS.
Prescribed by the Highest Medical Authorities.
Stronger effects than any other under smaller volume. No smell—no repulsive taste—no after-constipation—no gripes. As a daily laxative it can be taken either pure or mixed with milk, tea or broth.
Sold by all Good Druggists.

HARTSHORN'S SELF-ACTING SHADE ROLLERS
NOTICE SCRIPT NAME OF Stewart Hartshorn ON LABEL, AND GET THE GENUINE
HARTSHORN

HAMMOND'S
CELEBRATED
Calumet Oleomargarine
Strictly pure, cheap and healthful.
Ask your grocer for it.
Put up in packages of all sizes, also prints and rolls.
C. H. HAMMOND CO.,
607 to 615 THE ROOKERY,
CHICAGO.
Also offices at Boston, South Omaha, Neb., and Hammond, Ind.



C-U-R-E-S
DIARRHŒA, DYSENTERY,
MALARIA,
all ailments of the bowels. Is an anti-dyspeptic, and a **DELICIOUS INVIGORATIVE.** Leading Physicians prescribe it for **ADULTS AND CHILDREN.** *FOR SALE* by Druggists and dealers.
RHEINSTROM BROS., DISTILLERS OF FINE LIQUEURS,
54, 56, 58, 60, 62 E. 3rd STREET, CINCINNATI, O.

GOLD MEDAL, PARIS, 1878.
W. BAKER & Co.'s
Breakfast
Cocoa

from which the excess of oil has been removed,
Is Absolutely Pure and it is Soluble.
No Chemicals
are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.
Sold by Grocers everywhere.
W. BAKER & CO., DORCHESTER, MASS.

We can save you Fifty Dollars when you Build. See

A complete set of Plans to build from, simply state about price of dwelling desired. 25 cts. in stamps. Our book "Beautiful Homes." 25 cts. Our monthly book "The National Builder," 25 cts. Address
The National Builder, Adams Exp. Bldg., Chicago, Ill.

THE GREAT AMERICAN TEA COMPANY

LADIES

GET UP ORDERS. Entire New Departure. A HANDSOME PRESENT TO EVERY SUBSCRIBER.

THE GREATEST INDUCEMENTS EVER KNOWN TO INTRODUCE OUR NEW GOODS.

If you enjoy a cup of **Delicious Tea** send in your orders. 3½ lbs. Fine Tea by mail on receipt of $2 and this "ad". Beautiful premiums given away with $5 orders and upwards. The **most extraordinary bargains** ever offered, during the next thirty days. China Tea Sets and Lamps with $10, $15 and $20 orders to introduce our excellent **New Crop Teas.** Formosa and Amoy, Oolong, Congou, English Breakfast, Japan, Imperial, Young Hyson, Gunpowder, Sun Sun Chop and Mixed. Good mixed teas 20c. per lb. Headquarters in United States for Fine Teas. One pound of our tea will go farther than three pounds of trash. Thirty years' national reputation for selling **Pure Goods Only.**

THE GREAT AMERICAN TEA COMPANY,

P. O. BOX 289. 31 and 33 Vesey Street, New York.

PUBLICATIONS OF THE

ANALYST PUBLISHING CO.

THE AMERICAN ANALYST.
Weekly. Every Thursday. $1 per year.

THE ROOFER, TINNER AND SHEET-IRON WORKER.
Monthly. 15th each month, $1 per year.

THE LEATHER MANUFACTURER.
Monthly. 1st each month. $3 per year.

Reliable agents and representatives wanted everywhere on liberal terms. Address

ANALYST PUBLISHING CO.
19 PARK PLACE, NEW YORK.



THE CENTURY DICTIONARY

comes nearer to being a complete catalogue of the English language than any dictionary ever published. But it is not merely a dictionary: it is an encyclopedia of common things as well. It has been ten years in preparation. The leading scholars of the country have contributed to its pages. It is the latest dictionary and it ought to be, and is, the best.

A large descriptive pamphlet containing full-size sample pages, etc., will be mailed to any one sending five 2-cent stamps to

THE CENTURY CO., 33 East 17th St, New York.

A LARGE AND VALUABLE

Cook Book Free



We are enabled to offer our readers a most attractive combination, by which all may obtain a copy of the "Modern Cook Book" absolutely free. This handsome and valuable Cook Book has

320 Pages, Over 1,200 Recipes and Hundreds of Illustrations.

The recipes are the choicest selections from 20,000 that were received from practical housewives living in all parts of the United States, to which were added hundreds of the newest, best and most practical recipes of this progressive age, all of it set in new and large type, and the whole book handsomely illustrated.

IT HAS A BEAUTIFUL, ILLUMINATED COVER.

It is an elegant and admirably arranged volume of recipes for practical, everyday use. Among its points of excellence are the following:

Practical Suggestions to Young Housekeepers, Necessary Kitchen Utensils, Suggestions and Recipes for Soups, Fish, Poultry, Game, Meats, Salads, Sauces, Catsups and Relishes, Breakfast and Tea Dishes, Vegetables, Bread, Biscuit, Pies, Puddings, Cakes, Custards, Desserts, Cookies, Fritters, etc. Also for Preserves, Candies and Beverages; Cookery for the Sick, Bills of Fare for Family Dinners, Holiday Dinners, etc. A Table of Weights and Measures; Chapters on the Various Departments of Household Management and Work.

IT WOULD BE CHEAP AT $1,

As it is the Latest, Best and Most Practical Cook Book Published, More Nearly Meeting the Wants of American Homes than any other.

Any person accepting our offer will receive this paper one year, and also that charming home journal, the Ladies Home Companion, one year, together with the Cook Book, all mailed, postpaid, for less than the regular price of the two papers alone.

The Cook Book is offered absolutely free to induce thousands of our readers to become acquainted with the Ladies Home Companion, the publishers looking to the future for their profit, as they believe you will always want the Ladies Home Companion if you try it one year. Do not lose this opportunity to get the newest and best Cook Book free.

THE LADIES HOME COMPANION is a large and popular 16-page journal, published **twice a month,** and gives information about those things which ladies particularly wish to know, and is mostly written by ladies. **Original or Selected Stories** by eminent authors are found in each issue. A special feature is the variety of departments, each of which is conducted by a special editor. It gives the latest **Fashions,** arranged for practical use; timely hints to **Housekeepers;** cheering and helpful talks with **Mothers;** valuable information for lovers of **Flowers;** a pretty and pleasant page for pretty and pleasant children. All handsomely illustrated. It is not an ultra fashion paper, but a journal for the home circle, full of common-sense ideas and suggestions for home happiness and comfort.

OUR OFFER Send us $1.00 and you will receive **The American Analyst** one year, and also the **Ladies Home Companion** one year (24 numbers). And every one accepting this offer will also receive the above Cook Book, postpaid.

This offer is extended to **all** our subscribers. Subscribers whose subscriptions have not expired, or those recently renewed, are privileged to accept this GREAT OFFER, in which case their term of subscription will be extended one year.

Address THE AMERICAN ANALYST, 19 Park Place, New York.

"BILLET"

are

Carefully Selected

French Sardines,

Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,

HOWARD STREET, BOSTON, MASS.

To Subscribers, Readers and Advertisers.

SUBSCRIBERS' attention is called to the great variety of interesting and instructive subjects treated in this number. We respectfully ask the co-operation of our subscribers in extending our Subscription list, which will enable us still further to increase the value of the AMERICAN ANALYST to them.

The CASUAL READER is specially requested to examine our liberal premium offer.

ADVERTISERS who do not know of this Journal already, are respectfully referred to article headed "A Business Benefit."

ALL are kindly requested to peruse this number thoroughly.

The AMERICAN ANALYST can be had at any news stand in the United States. Any newsdealer will take orders for it, the American News Company being our wholesale agents. All postmasters will receive subscriptions.

Tabasco Pepper Sauce

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

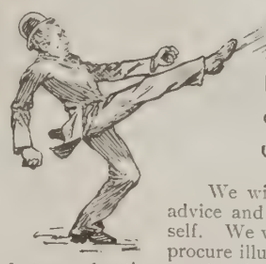
The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced, by connoisseurs, to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY,

NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

Don't kick



because your business is bad, but advertise If you don't know how to, write to us and we will tell you.

We will prepare your advertisement or give you advice and assistance to aid you in preparing it yourself. We will have the advertisement set in type and procure illustrations if any are needed. When a satisfactory advertisement has been produced we will furnish proofs and an electrotyped pattern to be used in duplicating the advertisement if the display or illustration make an electrotype desirable.

Address GEO. P. ROWELL & CO.,
Newspaper Advertising Bureau,
10 Spruce St., N. Y.

NATRONA BI-CARBONATE OF SODA.

(ABSOLUTELY PURE.)

NATRONA TRADE MARK SODA

The nature of the raw material from which NATRONA BI-CARBONATE OF SODA is made—viz., kryolith, a mineral containing *pure sodium*—insures a purity and uniformity of product which cannot be obtained from any other known material. In making BI-CARB. SODA from any other raw material, the use of sulphuric acid is a necessity, but none is used in any part of the process of making NATRONA BI-CARB.; hence its entire freedom from the slightest trace of arsenic, which is always present in ordinary soda. Its absolute purity and entire freedom from all traces of *sulphate of soda*, common salt and other impurities, render NATRONA BI-CARB. NEARLY TASTELESS, and being bolted through the finest bolting-cloth, insures the finest stage of division.

To these indisputable facts the attention of CONSUMERS of soda is specially called. They are IMPORTANT, and should influence both those who use and those who sell soda, to buy and sell NONE BUT THE BEST.

The NATRONA BI-CARB. Soda is kept in stock by almost every wholesale druggist and grocer throughout the United States, of whom it may be ordered.

Natrona Bi-Carb. Soda is unequaled by any other brand of English or American Manufacture.

PENNA. SALT MANUFACTURING CO.,

NATRONA CHEMICAL WORKS. PHILADELPHIA, PA.

ESTABLISHED IN LONDON, 1831.

DEAN'S PATENT Ardenter Mustard



W. G. DEAN & SON,
361 & 363 WASHINGTON STREET; 84, 86, & 88 NORTH MOORE STREET, N.Y.

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,
184 Greenwich St., N. Y.

INSTRUCTIONS TO SUBSCRIBERS.

The **Names of all Subscribers** are registered as soon as received, and paper is always promptly forwarded.

Postage.—The postage to all parts of the United States and Canada is paid by the publisher.

Remittances of small sums may be made with comparative safety in ordinary letters. Sums of one dollar or more must be sent by registered letter or P. O. money order, otherwise we cannot be responsible for same. Silver must not be sent in a letter.

Postage Stamps will be received for the fractional part of a dollar, and in any amount when it is impossible for patrons to procure bills, but you must send one or two-cent stamps only.

SUBSCRIPTIONS.—The AMERICAN ANALYST will be sent one year to any subscriber for ONE DOLLAR. New subscriptions can begin at any time.

We Stop the Paper at the expiration of the time paid for unless a renewal of subscription is received. Those whose subscriptions have expired must not expect to continue to receive the paper unless they send the money to pay for it.

Change of Address.—Subscribers wishing their addresses changed must invariably give their former as well as new address.

Missing Numbers.—It occasionally happens that numbers of our paper sent to subscribers are lost or stolen in the mails. In case you do not receive any number when due, write us a postal card and we will cheerfully forward a duplicate of the missing number.

Most Important of All.—In every letter that you write us, never fail to give your full address, plainly written—name, post-office, County and State.

Address all letters to

THE ANALYST PUBLISHING CO.,
19 Park Place, New York.

Vigoral

FOR

STRENGTH, NOURISHMENT AND REFRESHMENT.

PREPARED BY

ARMOUR & CO.,

CHICAGO,

From their celebrated EXTRACT OF BEEF, further strengthened in muscle-forming constituents by the addition of pure beef in powdered form.

Vigoral is seasoned ready for use and makes a delicious hot drink for cold weather.

SWIFT'S

CHOICE

Chicago Dressed Beef

AND

MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,

UNION STOCK YARDS,

CHICAGO, ILLS.

GLENN'S

SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,

C. N. CRITTENTON,

115 FULTON STREET,

NEW YORK.

Be progressive and keep abreast of the times. Avoid dyspepsia by using **Lard Compound** and **Cottolene,** a substitute for lard.

The highest medical authorities pronounce them healthful; and expert cooks commend them.

Our **Clairette** brand of cotton oil soap is the purest and best laundry soap in the market; as pleasant to the hands as genuine castile.

N. K. FAIRBANK & CO.,

CHICAGO AND ST. LOUIS.

The Standard of Excellence.

KINGSFORD'S

OSWEGO

Pure and Silver Gloss



STARCH

KINGSFORD'S

OSWEGO CORN STARCH

FOR

Puddings, Custards, Blanc-Mange, Etc.

THE PERFECTION OF QUALITY.

WILL PLEASE YOU EVERY TIME.

Always ask your Grocer for these goods.

We shall be glad to supply our readers with any periodical published at club rates.

Send us a postal naming periodical and we will quote you prices.

ANALYST PUBLISHING CO.,
19 Park Place, New York.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 19. NEW YORK, THURSDAY, MAY 7, 1891. WHOLE No. 219

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - $1 per year.
Single Copies, - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.

Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.

Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,

H. LASSING, M. D., } *Editors.*
T. P. McELRATH, }

No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

Artificial Foods 220
Bacteria 219
Detective Chemistry 219
Domestic Dietetics 221
Editorials 217
Millennial Speculations; Paternal Government; The Deadly Cigarette; Inventors' Association.
Escanaba 222
Hats and Hat Making 218
Liquid Globules 222
Ocean Mysteries 221
Wine Destroyers 222
Women as Inventors 220

MILLENNIAL SPECULATIONS.

The announcement, more or less startling according to the acceptance it receives, was recently made that Professor Totten, of the Sheffield Scientific School of Yale, has perfected a mathematical calculation, founded on Biblical truths, which he says proves beyond question that the Messiah will reappear on the earth in the year 1899. This is the ingenious scholar who some time ago fixed the exact date when Joshua commanded the sun to stand still. He has also made curious calculations to show that the fundamental dimensions of the Great Pyramid are founded on distances in the solar system, and employed the inch unit of measure known to our English system of long measure. He has further made studies to show that Americans are the lost tribes of Israel. It is not improbable that, in some form or another, we may witness a considerable revival of millennarianism. One of the last noteworthy agitations of the subject was that of Dr. John Cumming, who had fixed the beginning of the millennial period for about a quarter of a century ago. But a quarter of a century before that a far more widespread and famous excitement was caused in the United States by William Miller, who had predicted the Second Advent for 1843. But more or less important predictions and agitations can be found during many centuries. The grades of belief on the subject have varied from that of an approaching destruction of the world at a fixed hour to that of a coming in of the Golden Age without any physical crash. In various countries there have been sects that have held from time to time that the millennium had already begun, and that they were enjoying its opening years. The last decade of years of the present century, on which we have now entered, is likely to turn speculation anew in this direction; and presumably the twentieth century will see it still more rife, and gaining in intensity as the year 2000 approaches. A learned divine of the Dominion has for some time fixed upon that date for the Second Advent, arguing that the greatest crises in human history have occurred at intervals of 2,000 years from the creation, assuming this last to be about 4,000 years before the Christian era. The same date has been fixed by those who hold that the six days of creation signified or typified six periods, of 1,000 years each, in the world's history, devoted to toil and endurance, to be followed by a seventh of blissful rest. But what is most singular is the variety of texts and calculations adopted by those who deal with the subject.

PATERNAL GOVERNMENT.

One of the harmful results of the insidious teachings of visionaries of the Bellamy school, is visible in the growing willingness of the American public to subordinate individual rights to legislative control. This is glossed over with the phrase "Nationalism"—a suggestion which if reasoned out to its logical conclusion means the substitution of "government" for liberty—of "paternalism" for personal freedom. The contraction of liberty and the expansion of nationalism are clearly shown in the ten thousand bills introduced last winter into our state legislatures, to say nothing of the laws enacted or proposed by congress. To "have a law passed" appears to be the ambition of every man, and of every interest, from the millionaire ship owner or mill owner, or mine owner, to the hod carrier and the shoveler. Men are no longer supposed to be of age at twenty-one, nor even at forty-one. In the very pride of their strength and manhood they are placed under the guardianship of "government." Government must make their contracts for them, feed them with a spoon, and attend to all their business. In California, for instance, hundreds of bills were introduced of which the following are specimens worthy of careful study: one, making the employment of persons not American citizens by contractors or sub contractors a misdemeanor; another, making it unlawful to offer less than two dollars per day to unskilled laborers hired to work for the municipalities or the State; another, requiring that employers shall give three hours on election day to all their employes; and another, to establish a trout hatchery near San Francisco. The superstition is becoming general among us that "Government" lives up in the sky, that it has accumulated stores of impossible blessings to shower down upon its favorites, and that it has a guardian angel in the shape of a policeman to protect and care for every citizen. Independence is becoming a burthen to us, so we pray for masters to take us into their keeping, put our wills into harness, and guide our feeble minds. The tendency of this Nationalistic legislation is made clearer to us by the actual bills themselves than by any quantity of abstract moralizing on their character, the general inclination being to surrender thought, will and action into the keeping of the Government. In Pennsylvania is a bill to enable barber shops to keep open on Sundays, and in South Dakota is a bill to compel barber shops to remain closed on Sunday, a matter which it seems might properly be left to the laws of health and cleanliness, without interfering with the liberty of barbers. In Illinois is a bill to pay a bounty of one cent a pound on all the sugar made in the State from sorghum, beet or maple, while Nebraska has a bill to repeal that bounty. In Wisconsin is a bill compelling the payment of employes weekly, in Missouri a bill to compel mine owners to pay their employes every ten days, and in New Jersey a bill requiring hired persons to be paid fortnightly, with a Saturday half holiday thrown in, our kind and meddlesome old grandmother the State assuming that the citizens are not yet of age, and therefore not capable of making contracts for themselves. In Indiana is a bill to prevent the playing of base-ball on Sunday, and another compelling managers of State institutions to purchase native live stock for consumption; and in Dakota is a similar bill to encourage the use of native coal in State institutions. In Illinois is a bill allowing three cents to every inhabitant who kills an English sparrow, and in Indiana a bill giving a bounty of one cent for the scalp of that pugnacious bird; the consequence of which discrimination will be that the Indiana sparrow killer will send his birds over into Illinois, where the bounty will be three cents per scalp.

THE DEADLY CIGARETTE.

To a query as to the injurious effect of cigarette smoking, the Chicago *Herald* replies as if a deep, rich vein of disgust had been tapped in its soul: There is but little evidence that cigarettes are made of tobacco. They don't look like tobacco, don't taste like it, and certainly don't smell like it. Tobacco smoke has a pleasant odor; but if there is anything on the earth or in the waters under the earth that has a more disagreeable, nauseating, noisome, disgusting, loathsome, pernicious and nasty smell than cigarette smoke it has not been discovered. It is said that vermin will not bite a

cigarette-smoker. What are the materials used for the manufacture of cigarettes? We give it up. The imagination is staggered at the conundrum, and the system becomes unsettled when the mind grapples with this problem.

INVENTOR'S ASSOCIATION.

The principal benefit resulting from the recent Patent Centennial Celebration held at Washington, D. C., was the formation of a National Association of Inventors and Manufacturers. This will, without doubt, prove one of the important events of the period, and of vital interest to the inventors and manufacturers of this country. Perfect harmony and good feeling pervaded all the business sessions, and the National Association was formed without class or sectional jealousy. The election of officers and directors for the ensuing year resulted as follows: For President, Dr. R. J. Gatling, of Hartford, Conn., the inventor of the celebrated gun which bears his name, and which has brought him large remuneration and great fame, as well as distinction to our country as the producer of the most powerful projecting gun in the world. The four Vice-Presidents are Dr. Gardner G. Hubbard, of Washington, D. C., an inventor, and the father-in-law of Hon. Alexander Graham Bell, inventor of the telephone; Prof. William A. Anthony, President of the American Institute of Electrical Engineers; Thomas Shaw, Esq., Philadelphia, inventor and extensive manufacturer, and patentee of 110 inventions, and Hon. Benjamin Butterworth, Ohio, former Commissioner of Patents, ex-Chairman of the House Committee on Patents, and now Secretary of the Columbian Exposition. The selection of Prof. J. Elfreth Watkins, Curator at the National Museum, as Secretary, met with unanimous approval, and was a most excellent choice, as is attested by the success of his untiring efforts, during the last four months, as Secretary of the Patent Centennial. Mr. M. C. Stone, of Washington, an inventor and enterprising manufacturer, was elected Treasurer. The Board of Directors is composed of the following gentlemen: John Wise Smith, Esq., engineer, Pennsylvania; David G. Weems, Esq., electrical railway engineer, Maryland; Prof. R. H. Thurston, of Cornell University, New York; Chas. F. Brush, Esq., inventor and manufacturer of electric lighting apparatus, Ohio; Prof. Otis T. Mason, Curator, National Museum, Washington, D. C.; Hon. David M. Smith, manufacturer of sewing machines, New Hampshire; F. E. Sickels, inventor of the first steam steering machinery, Kansas City, Missouri; Oberlin Smith, Esq., manufacturer, New Jersey, and R. S. Munger, Esq., manufacturer of cotton machinery, Alabama. In addition to the regular officers and board of directors there will be representatives in every State. At an informal meeting it was suggested that there be a committee of seven on legislation to advance the interests of the patent system before Congress, and guard against any encroachment upon the rights of inventors and manufacturers.

HATS AND HAT MAKING.

DETAILS OF AN EXTENSIVE AND IMPORTANT MANUFACTURE.

In Danbury, Conn., more than 6,000,000 hats were made last year. Some hats, most of them for women and children, are made of wool, which is cheaper, but does not wear so well as fur, but by far the larger number of men's stiff and soft hats are made of fur. The best fur for this use is that of the nutria, a South American water animal, something like the beaver, but not so large. The steadily growing demand for nutria fur for other purposes as well as for the manufacture of hats, has raised the price of it so much that it is now used only in the finest hats. Next to the nutria the most expensive fur that hatters use is that of the Russian and German hare; then comes the fur of the cony, from Europe. The cony is something like the rabbit. The fur of the American rabbit and that of some other animals is also used. The skin is cut from the fur by a machine with revolving knives, which cut it off in shreds. The fur is left full length, and, as it rolls away from the knives, it preserves the general outline of the skin. The fleeces of fur are folded and packed, a number together, in small bundles. Formerly the greater part of the fur used here was imported already cut, but we are now competing with foreign countries in fur cutting, and about half of the fur used in this country is now cut here, in this city, in Brooklyn, and Connecticut. In making hats different kinds of fur are mixed. Various hat manufacturers have various mixtures which they keep to themselves; each strives to attain the best results in finish and durability with great economy. The process of hat making is thus given: The bundles of fur are opened, and the fur in the combination and proportions deemed best for the kinds of hats to be made is laid in a mixing box. Thence the fur is put into a simple machine, in which it is still further mixed. Then it goes to the "picker room." In this room the fur is freed from bits of skin, hair or any other foreign substance. A minute fragment of skin on the surface of a hat would spoil it. The fur goes in at one end between iron rolls to a picker which makes 2,400 revolutions to a minute. The picker is a small horizontal cylinder with short wire teeth. There is a series of rollers and pickers interspersed with blowing chambers. The pickers straighten out the fibres of the fur, which drops on a sieve. The hair, bits of skin and so on, including, sometimes, coarser bits of fur, drop through. These bits of fur are separated from the other substances and put through the machine again. From the picker the fur goes into a blowing chamber. Here it floats about softly, in an appearance not unlike a drab foam, and is still more thoroughly mixed. It goes on through the series of rollers, of pickers and blow chambers, and comes out from between the rolls at the other end a sheet of fur uniform in color and appearance, something like drab cotton wadding, except that there is no glaze on the surface. It holds together, but it is easily parted. The fur goes now to the forming room, where the hat bodies are made. It is weighed out according to the grade used and the size of the hat to be made. The weighing is done with accuracy, the weights varying by fractions as small as the sixteenth of an ounce. At one end of the forming machine is an apron upon which the fur is spread to be fed into the machine; at the other end is the trunk, which is the part in which the hat body is formed. The trunk looks something like a tall, substantially built water pail, with a fixed rounded cover. It is about 7 feet in height, about 2 feet in diameter inside of the bottom, and it flares to a diameter of 3½ feet. From this point the upper part of the trunk, which is perhaps one-fifth of the total height, and it is nearly flat on top; so the top is like a flattened dome. In the front of the trunk are to large doors which open down to its floor, right and left from the centre, and afford the freest access to the interior. Level with the floor of the trunk and in its centre is a little turn-table which turns around about 70 times a minute. Underneath is an apparatus which produces in the trunk a constant and uniform draught downward. A hollow cone made of perforated sheet copper, and with the top rounded instead of pointed, is set on the turn-table. The perforations are as thick as those in perforated cardboard. When the door of the trunk are closed the draught draws the air through the perforations of the cone. The apron is a flat table about 2½ feet square, attached to the machine. A young woman takes a portion of fur from one of the little square boxes, spreads it upon the apron, and feeds it evenly into the machine. It goes through a picker and a brush. The picker makes 5,000 revolutions a minute. It picks the fur and throws it into separated hairs to a blower running at high speed, which blows it into the dome of the trunk, where it floats like a shower or haze of fur. Then the draught from the bottom draws the floating fur down to the cone. It doesn't go through the perforations, but it completely covers the outside of the cone and clings to it, held by the draught. By means of simple contrivances the draught may be so regulated as to make the fur light upon the cone where it is most wanted. For most hats greater thickness of fur is required in the brim. The fur can be drawn to the cone and held to it in a deposit that is thin on top and increases in thickness down the sides to the base all around. While the draught is on, it is difficult to pull any of this fur away; if the draught is stopped, it is easy to pick it off with the fingers. It takes a minute or so for all the fur to settle on the cone; then the man who runs the machine opens the doors of the trunk and throws upon the cone a wet cloth which entirely envelops it. Over the cloth he places a cone-shaped tin cover like an extinguisher. The two cones, with the fur cloth between, are taken from the turntable and put on a wooden rack in a tub of hot water. When the cones are placed upon the rack it sinks with them until they are entirely submerged. Almost instantly they reappear and rise steadily from the water until they are again clear of it. They are lifted to a table, where the tin cover and the cloth are taken off and the perforated cone is turned bottom up. The hat body has already begun to shrink. It starts to roll off of itself. It is quickly but gently stripped down, and it sinks on the table wet and limp. It is taken by the top, straightened out and doubled over. This handling may appear to be done carelessly, but really it is done very carefully and skilfully. Then the hat body goes to the hardening room, where it is examined. It is now 2½ feet tall. When it has been examined it is rolled up. The rolling up makes the fur stick together, and the body keeps on shrinking; then it goes to the sizing room, where the hats are felted. Five hat bodies are laid together and made up in a roll. This roll is dipped in a tub of hot water and then rolled up in canvas, dipped in the water again, and laid on the lower rolls of a sizing machine just over the tub. The sizing machine has three horizontal revolving wooden rollers—two side by side below, and one a few inches above. The rollers have wooden lags or strips placed lengthwise. The bottom rollers turn upward, so that the roll of hat bodies is not drawn down, but it is rolled over between them and pressed gently, at first by the lower rollers only. The hot water, the motion, and the gentle pressures makes the bodies shrink; they are unrolled and again folded and dipped and rolled up. After going through two or three machines in this manner, they get one whose top roller is so adjusted as to help in the pressing and rolling. The hat bodies are shrunk to sizes and proportions, and all the manipulation requires care and skill. The hat body, folded flat, now measures about 10½ inches from the centre of the crown to the edge of the brim; standing like a cone, the diameter of the base is about 10½ inches. In the next room the hat is laid on the table, and with one sweep around the rim with a sharp knife the edge is made uniform and smooth. Little notches are cut in the edge to indicate the size. The hat then goes to a drying room, and then to a shaving room. In felting that body the hair that may remain in the fur works to the surface. The hat body is put on a turning machine and the outside is shaved off by knives that work something like the cutters of a lawn mower. The hat thus far followed is to be a stiff hat, and it goes next to the stiffening room, where the brim is dipped in shellac. This is done by hand very quickly and with great accuracy; then it is passed up between rollers, which squeeze it and leave in the brim the needed quantity of shellac. The crown stiffening is applied on the inner side with a brush by hand; then the hat goes into a steam box. The steam drives in the shellac, and the hat is put in a weak acid to set the stiffening. Then the hat goes to the blocking room. It is placed on a star, which is a frame of curved ribs radiating outward and downward, the general outline being something like that of the crown of a hat. Over the star is its

counterpart, the tip machine which is movable, and works the upper part of the hat body on the star into shape. The next star is larger, and on this the crown is brought nearer to shape; then the hat goes to machines which stretch and shape the brim. The hat looks now something like a soft travelling hat that has been stiffened. It is put in a vat of dye to be colored, and from there it goes to the blocking machine. After a hot bath it is put on a form. A shaper, which has a lever attached, is brought down over the hat; it flattens the brim and shapes the crown except on the top. After removing the shaper the hat is cooled with a stream of cold water and is put in a whizzer, which revolves it rapidly and expels most of the moisture from it; then it goes to the drying room and the next day to the squaring-up room, where the hats are sorted by sizes and squared up with shellac inside; then they go to the dry room again, and then to the finishing room. The hat is put on a block and sponged, ironed, brushed, sand-papered and singed. Without describing in detail or in sequence the elaborate work done in the finishing room, it may be said that here the crown of the hat is brought into shape and finished. The brim is finished as to its surface, but it is still left perfectly flat. The finer hats are finished by hand and the coarser ones by machine. The ironing of a machine-finished hat is done by an iron which is attached to a movable arm, and heated by gas fed into it through flexible tubes. As the hat turns on a block the iron adjusts itself with great accuracy, finishing its work at the centre of the crown and then dropping away. After the finishing the hats are again examined, and the defective ones are thrown out. The hat then goes to the rounding machine, which cuts off the edge of the brim and leaves it of the desired dimensions. The edge of the brim is stiffened with a preparation of shellac cut with alcohol, and the hat goes to the curling room. It is put, brim down, on a form which revolves slowly on a vertical axis. Two little steel arms, one on each side, turn the edge of the brim over, and two irons, one on each side, iron it down as the hat goes around. Then the hat is put in a round curling machine, which curls the edge of the brim and gives it a little dip at the ends. The edge is planed smoothly by machine in the shaping room where the brims are shaped. It is then laid on a baker, an iron table heated by steam. This heat makes the hat pliable. The finer hats are shaped by hand; others are placed, crown downward, on shaped forms that support the brim. Suspended over each form is a rubber bag filled with sand; when the bag is dropped it shapes the brim to the form. An endless wire of exactly the right size, and shaped to follow the curves of the brim, is inserted under the turned-over edge; then the hats are again examined and sent to the trimming room. The work here is all done by women. When the hats have been trimmed completely they are examined for the trimming and then they are sent to the packing room, where they pass the general inspection and are brushed by a machine. Now the hat is finished and ready to be packed. In the manufacture of soft hats the process is the same as stiff hats up to the final shrinking of the bodies, which are shrunk with a view to the style and dimensions of the hat to be produced. After the shrinking the processes vary in some details, but they are in their main features substantially alike.

BACTERIA.

A CHAPTER IN THE LIFE HISTORY OF A MINUTE ORGANISM.

Far down in the scale of plant life, is a certain great group whose individuals are spoken of in a general way, as micro-organisms, or microbes, or germs. One great family of the group of micro-organisms is called "yeasts." The commercial value of the single yeast plant my be estimated from the fact, that the cake of yeast costing the consumer one cent, contains many million plants. When these yeast plants, well distributed through the dough are set in a warm place, they begin to grow, and in order to grow they must consume food. Now, the flour and salt and water in the dough are very choice viands for these little plants, they assimilate some elements, and set free, among other things, carbonic acid gas. This occupies much more space than the carbon and oxygen occupied in the flour, and the gas as its expands "rises" the dough, rendering it light and porous. At the right moment off goes the whole mass to the oven where the lives of the myriad budding plants are soon extinguished; and when we eat bread, we eat the yeast cells, along with the fragments of the cells of the wheat or rye of the flour. Another familiar group of micro-organisms are the moulds; and still another group of lowliest, tiniest plants, closely allied to the fungi, are the bacteria—elemental organisms so simple in structure as to be almost completely represented by lines and dots, but endowed with such limitless powers of reproduction as almost to shame the multiplication table. Under the most powerful lenses, they are seen to consist of a minute mass of granular protoplasm, surrounded by a thin structureless membrane. When we put them under favorable conditions of growth, and give them food enough, they may be seen to divide across the middle, each portion soon becoming larger and again dividing, so that it has been calculated that a single germ under favorable conditions might at the end of two days, have added to the world's living beings 281,500,000,000 new individual bacteria. Indeed, if this sort of thing were to go on for a few weeks unhindered, pretty much all the oxygen, carbon, hydrogen, and nitrogen available for life purposes would be used up, there would be a corner in life stuff, and even the master, man would be forced to the wall. But numerous causes arrest their spread, and the bacteria in the long run are held closely within bounds, the world over. Indeed, life goes hard with many forms: and but for a curious provision for their preservation under adverse circumstances, it is likely that many species would soon die out. It is found that, when the conditions become too unfavorable for the continuance of life in some bacteria, a portion of the protoplasm sequesters itself in one end of the germ, and surrounds itself with a dense resistant envelope. This is called a spore. The old shell falls away, and this spore is now capable of resisting vicissitudes of temperature such as would have destroyed it in its form. Restore the spore however to favorable surroundings, and it bursts its protecting shell, and emerges a thin-skinned and vulnerable, but an active, and perhaps a triumphant germ. All of the bacteria, so far as we know, have the power, in nourishing themselves, of tearing asunder other forms of matter, assimilating a part of it in new combinations in their own bodies, and setting free the rest. These chemical substances which are set free by living, growing bacteria are the most diverse characters. They may be acid or alkaline, aromatic or bad-smelling, harmless or very injurious to man. The soil forms the great living and lurking place of the more common forms, and from this they are spread far and wide, into the air as part of the dust, or are washed off into the surface and other waters. The life history of many of these species of bacteria is well known to us, while whole groups are almost wholly unstudied. This much has been well established, that there are some species which are quite indispensable to the higher forms of life in this world, because it is they which tear dead organic matter to pieces, and fit it to be taken up by plants and worked over into food for men and animals. A piece of meat, or any other organic matter, would remain unchanged indefinitely, if shut up so that no living bacteria could come in contact with it. Under ordinary conditions, however, the bacteria do gain access to all dead organic matter, and then ensue putrefaction, and finally a total destruction, that is, a total change into other forms of matter. The bacteria are thus the great scavengers of the earth. Others are injurious to man. It has been learned within the past few years that several of the most serious diseases known are caused by particular species of bacteria. Among the forms which thus originate are tuberculosis, Asiatic cholera, erysipelas, and some forms of blood-poisoning, tetanus or lock-jaw, some forms of pneumonia, typhoid fever, and diphtheria. We know the germs which are concerned in the causation of these diseases, and can grow them in tubes in the laboratory, and work out their life history. Vast numbers of bacterja are taken into our system with a great variety of uncooked foods, and with water, and milk; and of those which multiply in our bodies, the great majority are innocuous. but a small proportion of them produce substances which act like poisons. These substances are called ptomaines. It is difficult to conceive that all these curious doings, all these far-reaching accomplishments, should be carried on by organisms so small that a thousand of them mustered abreast could pass through the hole pierced in a paper by a fine sewing-needle. and never touch the sides; yet so it is.—*Dr. T. M. Prudden in Harper's.*

DETECTIVE CHEMISTRY.

HOW AN INNOCENT MAN WAS SAVED BY A REAGENT.

The correspondent of the Paris *Temps* tells the following romantic story, which is said to have occurred at a recent sitting of the Appellate Court at Rennes: In September, 1890 a band of sharpers established in that town a business in chemicals under the name of A. Carrie. The method pursued was to set up bogus firms in one town after another. With envelopes and paper bearing fictitious names, imported orders were given to wholesale houses, for which payment was to be made at one, two, or three months' date. The goods thus obtained were sent to receivers of stolen goods in Paris. The band then disappeared, to commence similar operation elsewhere. They were arrested at Rennes. Their leader, Audibert, when questioned before the magistrate, named M. Loque's a Parisian chemist, as the receiver of the stolen goods. One of Loque's letters had, in fact, been seized by the court at the *poste restante*, in which he gave an order Loque owned the letter to be his, but stated he gave the order to what he believed to be a *bona fide* firm at Caen, and not to Audibert. In spite of this defense he was sentenced to eight months' imprisonment. From this conviction he appealed. He had remarked some ill-formed letters or marks on the back of the suspected letter in question, and thought that this note might have served as a secret communication between Audibert and his accomplices. Counsel for the defense claimed examination of the incriminatory document by an expert, and, under the action of a chemical reagent, an entire letter became apparent. It proved to be a communication between Audibert and a receiver of stolen goods at Paris in reference to Loque, who, said the correspondent, refused to have anything to do with Audibert and his band. M. Loque was consequently acquitted by the court after this establishment of his innocence.

WEALTH AND HUMBUG.—The faith curists of this city boast that they have quite a number of wealthy people among their patients. It appears that some of these people are afflicted with maladies that have not yielded to allopathy, or homœopathy, or hydropathy, or patent medicines, or travel, or mountain air, or seabreezes, or careful nursing, or anything else. When all medicaments and experiments have failed, they are ready to try the faith cure, and, though they may not find any benefit from it, they can always live in hope of being benefited by it. The faith-cure practitioners, who are of both sexes, admit that they prefer patients who are wealthy to those who are otherwise, and that they will not guarantee a cure in the case of any one whose faith is less than boundless. It is reported that even some sufferers with boundless faith have been given up as incurable on account of the untimely stoppage of their pulse.

ARTIFICIAL FOODS.

THE NATURAL ARTICLE THE ONLY ONE TO RELY ON.

Several years ago, when a French chemist succeeded in liquefying and solidifying oxygen, speculation was rife as to the possible use to which the new substance could be put as a food. People who believed that there was such a thing as the "principle of life," thought that it could be directly reached and sustained by taking solid oxygen into the stomach, the supposition being that what could support life in one way could support it in another. If we breathe oxygen and it does us good, why should it not do us even more good when we take it in bulk, and let it reach the life principle by absorption through the tissues of the digestive apparatus? There was one fact, however, which was not taken into consideration by the people who thought that at last the true pabulum of life, of which the Rosicrucians and their successors had dreamed, had been found. In the stomach solidified oxygen would almost certainly act as a corrosive poison. Davy imagined that the principle of life must be a gas, and on this notion the theory was built up that the more gas one can get into his body the more lively he is likely to be. The doctrine that there is such a thing as the principle of life except in connection with living and organized matter, is now generally discarded, and the man who believes that he can make an egg from which a chick can be hatched is, doubtless, a bold and original thinker, but in practice his work is likely to be of little value. Eggs come in the natural course of events, and can no more be manufactured artificially than a Frankenstein can make a real and working man. It is, of course, possible to simulate some of the products of nature, in the way in which Italians are said to make blood oranges by injecting aniline colors under the rind of the common fruit; but oranges doctored in this way are the poorest possible of substitutes for the products of unassisted nature. In itself the blood orange is not a particularly desirable addition to a meal, and when it is made artificially it is worse even than the original article. There have been chemists who have been so utterly lost to all ideas of propriety that they have made and set before their guests gelatines and galantines extracted and compounded from old boots and shoes, but nobody except the ingenious chemists themselves has ever been known to take kindly to this variety of food. What we want to get from nature is that which she herself produces in reasonable ways. The orange must be the product of the tree, and the delicate gelatine must come from the sources to which even the primitive man used to look for it when he boiled the bones and sinews of the lower animals that ranged the forests of primordial times. In short, though there are many ways in which man can manipulate for his own purposes even the refuse of nature, there is little or nothing that he can do in the way of improving natural products. The egg of the hen must come directly from the nest, and not be cunningly contrived in the laboratory. The apple and the orange have only one proper way of coming into existence, and that is the way in which they have always grown. "Special creations" of this sort are works for the production of which we must look to a higher power than that of man.

WOMEN AS INVENTORS.

FEMININE IDEAS PRESENTED AT THE PATENT CENTENNIAL.

Writing from Washington under date of April 17, Rene Bache says: "Upon the women of this country a large part of the glory of the Patent Centennial celebration has been cast. Within the last century they have entered, for the first time in the history of the world, as competitors with men in the field of original contrivance. So rapidly have their steps in this direction accelerated, that in the last two years and a half they have secured from the Government exclusive rights in five hundred machines and other devices sprung from their own wits. No longer can it be said as of old that the female of our species 'never invents anything.' To-day three thousand of her inventions are recorded in the Patent Office at Washington, covering all the arts and industries known to the human race. Some of these contrivances devised by women are remarkably interesting. For example, there is a 'pocket spittoon,' designed to cure the objectionable habit of indiscriminate expectoration. Provided with one of these a gentleman can chew tobacco at ease in the most exclusive drawing-room, and without danger of annoying his hostess by squirting the offensive fluid over the furniture. A "pneumatic dress-form' is made of india-rubber with a tube attached, so that it may be blown up to any degree of fatness, and thus be made to play dummy equally well for a slender maiden or the most corpulent of middle-aged ladies. There is also a 'portable balcony,' for purpose unknown, though presumably such a thing would be a most useful convenience for popular actresses or other public favorites, who, in travelling about the country, and on occasions of impromptu serenades, could simply attach the balcony off-hand outside the hotel window where they might happen to be staying, and make a graceful response from its platform. An invention of the kind ought likewise to be serviceable to lovers, *a la* Romeo and Juliet. A really valuable invention of feminine origin is a deep-sea telescope with a lamp attachment, by the aid of which the bottom of the ocean may be examined for wrecks, obstructions to navigation, and torpedoes on occasion. With this apparatus the diver can make a deliberate inspection of the sunken treasure ship before venturing down himself to drive the crabs away from the grewsome corpses and open the chests filled with gold and silver ingots. That reminds me that another woman is responsible for what she calls an 'improved corpse cooler,' intended for preservative purposes; while still another has rights in an 'improvement in floral ornaments for tombstones.' More cheerful in its character is an ingenious trap for bedbugs, which consists of a flat block of wood full of small perforations, and opening on a hinge like a book. It requires no bait, but is simply to be placed in an infested bed, when the vermin quickly seek it because it affords exceptional accommodations for hiding. The block is of unpainted white pine, which is preferred to painted wood by the creatures—and furthermore, after some have once occupied it, others find the trap more attractive. Once in a while the affair is taken out and put into boiling water. This is a sport calculated to afford much innocent amusement to the housewife. Many of these devices invented by women express the most beautiful and unselfish devotion to the comfort and convenience of the men folks. One is a 'pantaloon tree,' though it must not be imagined that what some people call 'pants' actually grow upon this interesting arboreal contrivance. It is merely designed to keep trousers in shape. Another is a 'moustache spoon,' intended to keep that masculine ornament out of the soup, and a third is a perspiration-proof paper shirt, the material of which consists of two layers of thin and tough paper of a peculiar kind, with a stratum of fish-glue between. There is also what its fair originator calls an 'improvement on cigars,' her idea being that each cigar shall have attached to it a corn-stalk mouthpiece, which is expected to improve the drawing of the weed, save the lips from the nasty tobacco, and incidentally economize the material smoked by dispensing with butts. For the use of the laboring man a new sort of dinner pail is provided, which is likewise a dark lantern. He may be detained after dark at his work on winter evenings, or perchance he may be inspired with a notion of adding to his income by employing his leisure in pursuit of burglary. For employment by the fair sex exclusively is a patent rouge-pad made of cotton-wool and soaked thoroughly in a mixture of the purest carmine, juice of the blood-beet, juice of the hollyhock root, extract of sweet clover and water. After being dried the pad is ready for market; it is used by dampening it slightly and applying it judiciously to the face. There are pads for corsets, too, of varied construction, designed to supply curves to the female form divine, and several different 'doll supporters,' whatever they may be. A woman is the inventor of an imitation of braided human hair, and another has devised a process for 'extracting fur from the skins of animals and manufacturing it into yarn.' Still another has found a way to utilize the heat radiated from the bottom of a stove in such a manner as to warm the floor of the room and the feet of the occupants, a tin reflector throwing the heat rays in all directions outward. A machine for 'pricking soles' suggests the witches in Macbeth, although they knew when wicked things were coming by the pricking of their thumbs. To a lady who has suffered from insomnia the idea has suggested itself of a 'sleep encourager,' which is a contrivance consisting mainly of padded springs. The apparatus is attached to the head upon retiring, the springs being so adjusted by means of thumb-screws as to slightly press upon the veins and arteries of the neck; thus the flow of blood to the head is somewhat checked, the brain being kept in this way from undue stimulation, and balmy sleep follows. Further inventions of petticoat origin are a mechanism for making the features symmetrical by pressure applied, a device for protecting tables from crawling insects, a surprising mosquito killer, and a perforated jar with phosphorus and some other things inside, from which 'ozone' can be ground out to order. Woman's inventive genius has naturally been largely exercised thus far in devising household contrivances, particularly for the nursery and the kitchen. She has taken out letters patent on a baby charmer and dental cutter, a baby walker, several improved sorts of bibs, ditto diapers, a baby jumper, and baby chairs. Also in her list of new creations are toy skating rinks, musical tops, novel dolls, and building blocks. In the culinary line there are dough-kneading machines, a mechanical arrangement for greasing baking-dishes, a smoothing-iron that heats itself, a fish scaler, a dish-washing contraption, and many cooking-stoves. Ideas respecting dress are numerously represented, with reference to corsets most of all. The corset seems to bear the same relation as a puzzle to the work of female inventors as does the car-coupler to that of the men with fresh thoughts—neither ever seems to be arrived at in a shape that is entirely satisfactory. Of such things as bustles, dress elevators, abdominal supports, and improvements in chemises, there is no end. Buttons and studs, as well as fasteners for them, appear to have taxed much feminine ingenuity; nor are such trifles neglected as novel blacking-brushes and blacking-boxes, folding soap-dishes, and combined scissors and tape measures. In the line of machinery pure and simple the women are shown, by the reports of the Patent Office, to have exhibited great inventive capacity. To sewing-machines they have paid most attention, the result being a long list of useful improvements, which are in general use to-day. Among them may be mentioned a needle that does not have to be threaded, and a device which renders it possible to thread the needle while the machine is running. Other remarkable mechanical patents of theirs are for electric lighting, noiseless elevated roads, apparatus for raising sunken vessels, sewing-machine motors, screw propellers, machines for weaving hair for wigs, agricultural tools, spinning-machines, processes for making paper pulp out of straw and wood, locomotive wheels, burglar alarms, and methods for destroying vegetation on railways. An Ohio girl has discovered a way of transforming a barrel of petroleum into ten thousand cubic feet of gas. Another fair genius has constructed a machine which will make as many paper bags in a day as thirty men can put together. Still another one has originated a safe for provisions, which is very appropriately adapted to the keeping of the high-priced spring vegetables just

now in fashion. Sisters in the new inventive craft have produced such interesting things as a bathtub and sofa combined in one piece of furniture, a bureau and bathtub, likewise a combined trunk and bureau, and a step-ladder that is an ironing-board in disguise. Another presumably fair inventress has patented an 'improved copyholder,' though it is only just to say that, from the newspaper point of view, the copyholder does not need improvement so much as does the proof-reader. A 'folding scaffold' is not designed for purposes of execution, but merely for windows. In the same collection of valuable feminine fancies are a life-raft, an impregnable chicken-coop, an adding machine, a portable summer-house, fly-traps, an improved see-saw, a model grain elevator on a new plan, a device for numbering houses, processes for imitating marble and stained glass, a method of preserving eggs, improved ladders, a rocking-chair that fans the person rocking, alloys to imitate silver, life-preserving garments, and a war vessel that is susceptible of being converted off-hand into a land fort by simply taking it apart. Who says 'women never invent anything?' Only last year there died here in Washington the woman, Mrs. Nancy Johnson, who in 1843 invented the first ice-cream freezer. Up to that time the tool used to make ice-cream was a big spoon. She was ninety years of age. The first woman patentee in this country was Mary Kies, of Connecticut—the State that has more inventors, in proportion to its population, than any other in the Union. Her idea was for weaving straw with silk thread. The notion of syllabic type was a woman's. But only a suggestion can be given here of the great contributions which petticoat genius has made to invention in the United States. Think how many women inventors there must have been who preferred to remain in the background, and permit their fathers, husbands, and brothers to appear as the authors of their creations! Consider, too, how much help the ladies—God bless them!—give the men in the development of new thoughts. If the famous Galvani's wife had not been sick, so that he was obliged to make frog-leg soup for her, the frogs would not have been lying on the table amid his electical apparatus; a live wire would not have touched the limb of one of the batrachians, setting the animal off into a frantic fancy dance, and galvanism would have remained for the time being undiscovered.

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

May.

MEAT.—Beef, lamb, mutton, ham, kidneys, liver, sausage, veal.

GAME AND POULTRY.—Brant, pigeon, chicken, duck, turkey, goose, snipe.

FISH.—Anchovy, bass, catfish, cod, eels, clams, flounder, halibut, herring, lobsters, mackerel, mussels, perch, porgie, rock-fish, salmon, shad, shrimp, turtle, trout, sturgeon, whiting, weak-fish.

VEGETABLES.—Artichokes, beans, carrots, garlic, lettuce, onions, parsley, parsnips, potatoes, shallots, spinach, turnips, watercress, radish, rhubarb, sea kale.

PRACTICAL RECIPES.

CELERY CONSOMME.—Clean two heads of celery and cut the stalks in inch lengths and cook them for a few minutes in sufficient butter to prevent burning; when they are colored add a pint of clear soup, simmer a few minutes, then add a quart more of the soup, skim off any floating globules of fat that may be floating on the surface, season and serve.

FRIED VEAL.—Take a piece of the forequarter of veal, remove the surplus fat. Put the whole piece in a saucepan and add a sliced onion, a sprig or two of celery tops, salt, and a liberal allowance of whole peppers; cover with hot water or soup stock and simmer until the bones can be easily removed, when it will be properly cooked. Placed between two platters, on top of which put a heavy weight and let it become cold. Strain the sauce to free from fat and hold it in reserve. Now cut the veal into neat pieces of the same size; dip them in beaten egg and bread crumbs, and strew over them a little salt and pepper; dip again in egg and again roll in crumbs; have on the range a liberal quantity of fat; when it is smoking hot, add the meat and fry to a delicate brown. Heat the sauce and add to it just enough sherry to give it flavor, thicken it with a little brown flour, taste for seasoning, and send to table in a boat.

POTATO CHEESE CAKES.—Bake three or four large mealy potatoes, and when well done turn out the insides. When you have half a pound rub it through a wire sieve. Beat up ten ounces butter with eight ounces sugar, add to them five well-beaten eggs, flavor with lemon; beat up very light, add the potato and bake in patty pans lined with paste. When done put an icing over them and stick a blanched almond in the centre. Eat them cold but when quite fresh.

SPANISH SAUCE FOR FISH.—Pound to a paste a little garlic and two red peppers that have been soaked for a moment in boiling water; add to the mixture a little water. Beat a cupful of sweet oil to boiling point with a tablespoonful of vinegar and a little salt. Add to this the pounded peppers and remove from the fire. In this sauce cook any kind of fish and serve it with it.

SPANISH SALAD.—Wash a head of lettuce and dry it carefully and thoroughly. Put in a salad bowl equal quantities of cold water and vinegar, a teaspoonful of mixed pepper and salt and four times as much oil as you have water and vinegar. Beat all together and add a small fresh onion chopped fine. At the last moment add the fresh crisp lettuce.

OATMEAL ROLLS.—Heat two cups of milk and to it add a good tablespoonful of butter, cool a little, then put in three cups oatmeal, one cup flour, a beaten egg, salt, and one-half yeast cake; knead the dough into a smooth mass and set over night. In the morning knead again, roll out and cut into rolls. Set away till very light, then bake.

ARROWROOT CUSTARD FOR INVALIDS.—One pint milk, one tablespoonful of sugar, one tablespoonful of arrowroot, one egg. Mix the arrowroot smooth with a little of the milk; put the rest of the milk in a saucepan and when it boils add the arrowroot, sugar and beaten egg, that have all been well beaten together, also very little salt. Stir the custard for a few moments, then cool.

OCEAN MYSTERIES.

THE REVELATIONS OF THE BOTTOM OF THE OCEAN.

The Hydrographic office of the navy is about to publish a descriptive account of the depths of the oceans, which until very recently have been considered in the light of mysteries most profound. Only a few years ago the bottoms of the great seas of the world were unknown and unexplored, and the abysses beneath their waters remained unfathomed. Such soundings as were attempted were made with ropes and crude apparatus, and away from the shallows "no bottom" was the record upon the charts. It remained for the ingenuity of this generation of mankind to map out the deeps, with their mountains, valleys and even streams. The mighty caves of ocean have been to some extent surveyed, and the very creatures that dwell in them have become newly familiar to science. If the ocean waters should be affected by a miraculously low tide, so as to sink as much as the height of the Washington Monument, an astonishing alteration would be made in the shape of the North American Continent, the line of the Atlantic's breakers receding so far that New York City would find itself more than one hundred miles from the sea, as would Boston likewise, and Savannah, Georgia. It would be discovered that the present shore of the Atlantic is not the edge of the continent at all, but that this edge is away out to the eastward, so that if it formed the coast, this country would be enough larger to make room for four or five new States. On the Pacific side it is quite otherwise. There the continent's edge is marked pretty closely by the shore line, and so abrupt and precipitous is it, that enormous depths are found close to land all along that coast, great submarine valleys lying along the very margin of terra firma. In starting to take a walk over the floor of the ocean, perhaps it would be as much fun as any other plan to set out from San Francisco, for a view of the Pacific's bed. For the first twenty-nine miles of the journey westward you will proceed over a level plateau formed of detritus which the river water has cast out through the Golden Gate for a thousand centuries. The depth of the sea for that distance is only about two hundred feet, but at the end of it the bottom drops suddenly to two and a half miles. To get to the foot of this tremendous hill is likely to be difficult, in as much as you must climb from a greater relative altitude, and by a much steeper incline, than that by which a traveller passes from the summit of the Sierra Nevada range to the valley of California below, at Sacramento. As you go down, you will experience a cold that becomes steadily more intense, and the pressure of water from above, which makes the cold, grasps you with such a mighty grip that your body would be crushed to a jelly in its fluid embrace, were you not protected by armor of immense resisting power. Without such an equipment, as well as a store of air, and a powerful light, there is no use in your attempting to explore the ocean's abysses. At the foot of the great declivity you will find a seemingly interminable plain, like a prairie. It is the beginning of the floor of the Pacific, which is for the most part so wonderfully level that you could drive over it with the utmost comfort in a light carriage, were the water all taken away. As you proceed westward, though the slope is so smooth and gradual that you do not notice it, the bottom descends on a slight incline, until, at five hundred miles from the land, the surface of the ocean is three miles and a quarter above your head. This is the normal depth of the vast Pacific plateau. You travel over it for another five hundred miles, when you come upon a gigantic mountain, which towers up from the ocean floor to the height of nearly three miles. Its existence has only been ascertained by soundings, because half a mile of sea-water flows over it. Beyond the mountain is the plain again. It is a dead level of shelly ooze, such as covers pretty much all of the ocean floor. The mixture, sometimes greenish and sometimes brownish, is partly detritus washed by rivers from the land, and partly shells of almost microscopic animals, called *foraminifera*, which fall upon the bottom in a gentle and continuous rain. All the chalk beds in the world are formed of such shells, and the very stones of which the Pyramids of Egypt were built are composed almost wholly of them. There is a certain monotony about the aspect of things in these enormous depths. One may well be oppressed, too, by the absolute silence which reigns. Frightful storms may be raging on the surface, but here, three and a-half miles beneath, all is as still as death, and not even the murmur of a wavelet reaches the ear. Everywhere, if you close your lantern, is the darkness of absolute black—a liquid darkness that makes itself felt by a pressure of two tons to the square inch. The water is so cold as to be very little above freezing point. On every side spreads

a desert of interminable extent, frightful in its desolation, with not a blade or sprout of any sort—nothing, in fact, but the shelly ooze, into which your foot sinks somewhat as you tread. Perchance there are a few sea-lillies in your path; but you know that they are animals and not of the vegetable nature, which they feebly counterfeit. You might follow the same dead level, now and then coming across an isolated elevation, all the way across to Asia, 10,000 miles farther, if you liked. Instead, you go southwest a thousand miles, until you come to a group of tremendous volcanoes, rising precipitously from the bottom, whose tops are called the Sandwich Islands. Thence three thousand miles directly south, and you find yourself entering a portion of the ocean plain that is comparatively mountainous. Many of the hills are tall enough to project out of the water, thus making islands large and small. You are exploring the sub-cellar of Polynesia, so to speak, and you find, as you travel westward past the Society, Navigator, Friendly, Fiji, and other groups, that the floor you are walking on still preserves its depth and evenness, save where in spots, vast shoals have been uplifted, of volcanic and coral-line formation, bearing such groups as these in the shape of sugar-loaf elevations high enough to supply habitations for man and incidental material for missionary enterprise. It is believed by geologists that once upon a time there were many more islands in the Southern Pacific than there are now, and that they have disappeared, owing to volcanic agency. Real estate in that portion of the world would not appear to be held on the most secure terms; it is always going down or coming up, a mountain one day being a hole in the ground the next, or vice versa. It was only half a dozen years ago that a peak two miles high rose in a single night out of the deepest part of the strait of Sunda, between Java and Sumatra. You go no farther south, because below the fortieth parallel of latitude there are no islands worth mentioning, and the ocean floor is nothing but a level and uninteresting plain, the water shoaling steadily toward the North Pole, so that the big icebergs in the Arctic and Antarctic regions are apt to be found aground. Passing northward along the deep valley which hugs the eastern shore of Australia, fringed with the most wonderful coral reefs in the world, you keep on up by the coast of China until you reach the point a few hundred miles south of Japan where is the only deep-sea abyss known that has never been sounded. The last attempt registered five and a-half miles and no bottom, because the apparatus broke. Other soundings have been made successfully, however, on the east of Japan, and it is known that along the coast of those islands and close in shore runs the deepest chasm in all the Pacific Ocean, and through this chasm rushes the great black stream, which corresponds to the Gulf Stream of the Atlantic. In the course of a journey across the Indian Ocean you are not likely to come across anything different from what you have already seen, though you might pause to open some selected oysters for pearls in the fishery waters of Ceylon. The bottom of this great sea is the same sort of interminable shelly plain, though somewhat less deep than the Pacific. Upon rounding the Cape of Good Hope, you are in a position to make a bee line for New York. It is a long journey, however. The conditions are not such as are most favorable to pleasant traveling. You find yourselves about three miles deep, surrounded by the same cold and silent liquid blackness. The desolation is profound, and yet you are not alone, nor have you ever been since you began your walk upon the ocean floor. These tremendous depths literally teem with life. There are multitudes of fishes more ferocious than anything that are known to shallow waters—all of them carnivorous, because there is nothing vegetable for them to eat, and they must prey upon one another. Most of them have huge goggling eyes, with which they come and gaze at you, having no fear, inasmuch as they have never seen man before. Their eyes are so big in order that they may catch every possible ray of light. It is true that in these abysses there is no light whatever that is of day; but for that reason, inasmuch as it is necessary to see in order to pursue their prey, these predatory monsters carry phosphorescent torches on their heads, with which nature has provided them. Some of them do; that is, while others have luminous spots upon their sides. These lights serve them not only for purposes of vision, but also as bait wherewith to attract victims. Some notion is had of the astonishing voracity of such fishes of the nethermost deep when it is understood that certain species can swallow other fishes ten or even twelve times as big as themselves, the glutton literally climbing over and around the one swallowed, first with one jaw and then with the other. Among the most extraordinary of the creatures is a fierce shark, which resembles an eel somewhat in shape. All of them without exception are as black as ink. Their bodies are pulpy, even their skeletons being soft, the great pressure of the water rendering them compact, although when brought to the surface with the dredge they are apt to burst and fly to pieces immediately, being relieved of the compression to which they are accustomed. Thus, making your way over the plain of the ocean, you find yourself surrounded and accompanied by inky monsters, all eyes and jaws, while around and about on every side pass silently the unending torchlight processions of the deep, the only color that relieves the gray monotony of the bottom being supplied by shrimp-like crustaceans, some of brightest scarlet and others of vivid orange yellow. In the distance, now and then, you may behold in a shadowy way vast and formless things of gigantic size, which for all you know may be survivors of races antediluvian, long since supposed to be extinct. On your way over the bed of the Atlantic to New York you may turn aside, perhaps, to look into one of the deepest sea holes that can be found in the world, immediately north of Porto Rico, where the ocean floor takes a sudden dip into a gulf more than five miles below the surface of the water. It is extraordinary how these West Indian islands rise precipitously from the depths, uplifting their mountains miles high out of the sea. South of Cuba, in the Caribbean Sea, is a hole much bigger than the one north of Porto Rico, which forms an elongated valley nearly six and a half miles deep. This is believed to be the deepest of all the valleys of the ocean. Among other surprising things, you would come across the Bermudas, may be, nine hundred miles due east from Charleston, which are the peaks of mighty hills rising abruptly out of the midst of the great flat ocean plain. Upon reaching the edge of the North American continent, about one hundred and fifty miles southeast of New York city, after a pretty steep climb from the three-mile depth, you find yourself in the shallows, following the line of a tremendous gouge six hundred feet deep which the Hudson River has cut out in making its way to the ocean beyond. All you have to do is to pursue this until you find yourself at the foot of Manhattan Island, where you will doubtless consider it a relief to get upon dry land again and seek the nearest first-class hotel.—*Transcript.*

ESCANABA.

THE GREATEST IRON PORT OF THE WORLD.

Escanaba is the county seat of Delta County, Michigan. It lies at the foot of the great pine forests, and overlooks Little Bay de Noquet, the headquarters of Green Bay. Five years since, it was practically a village in the wilderness. To-day finds it a city with a population of 8,000, lighted by electricity, having a well equipped fire brigade, water works with a capacity of 4,000,000 gallons per day, a high school and three other schools, six churches, three newspapers, a railway station where 216 trains arrive and depart daily, and it will shortly have an electric street railway in full work. Its annual retail trade is estimated at $3,000,000, and its wholesale trade, including iron ore, pig iron, lumber and coal, at about $25,000,000. According to Mr. Nursey's carefully written report, capable of the fullest verification, Escanaba is the greatest iron port in the world. He tells us that during the navigation season of 1890, it shipped 3,700,000 tons of iron ore, or nearly double that of all the ore ports of Michigan, Wisconsin, and Minnesota combined. Its lumber output amounted to about 120,000,000 feet, while the freight capacity of the vessels entering and clearing from its port exceeded 8,000,000 tons. This compares with the tonnage of the greatest seaports of the world, which are: (1) London, 19,000,000; (2) Liverpool, 14,000,000; (3) New York, 11,000,000; and next comes Escanaba with 8,000,000 tons.

WINE DESTROYERS.

GRUBS BORE INTO THE CORK AND RUIN THE CONTENTS.

"A subject that has recently engaged the attention of European entomologists is of great interest to the wine producers of our State," said a prominent vineyardist recently to a San Francisco *Chronicle* reporter. "Investigation among the vineyards in France proves the existence of two or three types of moths in wine cellars. These moths, it appears, thrive in damp cellars. It is said by the scientists that the moths lay grubs, which feed on the fungoid growth that forms on the wine vats and moldy corks. The insect bores and forms galleries in the cork nearest to the glass, and through the holes thus formed air gains access to the wine, spoiling it in many instances. Our chief difficulty in bottling wines has been in obtaining a supply of perfect corks. At least 25 per cent. of corks, after examination for fitness, are rejected. As soon as we heard about the discovery of these insects an examination of several bins was made at the vineyards, and while our cellars are in no way damp or moldy, we found that the corks were perforated, and that in some cases the wine oozed through them. Now we are trying a method to stop the inroads of these grubs. After soaking the corks in hot water and then in brandy they are dried, and when they are put into the bottles, the tops are coated with a layer of paraffine wax previous to sealing them with ordinary wax. We hope by the use of the paraffine compound to stop the ravages of these insects. Neither the grubs nor insects feed upon the wine, but simply use the cork as a place to deposit their eggs, and the coating may possibly prevent their entrance. This method of manipulating the corks is worthy of trial by all our California wine growers, and if successful will materially aid in promoting their interests."

LIQUID GLOBULES.

WHY DOES A DROP OF WATER TAKE A GLOBULAR SHAPE.

By striking the surface of a pond obliquely with an oar, a shower of drops will be thrown up. Most of them will, when they fall, reunite at once with the sheet of water below. But some of them will not do so, but will float and roll rapidly about, looking like little spheres of quicksilver. These globules will, after floating a longer or shorter time, suddenly disappear, and leave no sign save a tiny ripple. Although these water balls are such common objects, yet they are well worth the student's attention. He can manufacture them at will, and in a manner convenient for observation, by taking, instead of a pond of water, a china saucer filled with kerosene oil. The tension of the skin which all fluids seem to exhibit, and which accounts for the floating globules, seems to be greater in the case of

the oil than in water. With the aid of a rod of wood the size of a pencil the apparatus is complete. By dipping the rod in and out we may obtain an abundance of the globules whose antics we are to study. The first thing which attracts attention is, that often when only one drop of oil has fallen from the end of the rod we see two globules floating, and also, we observe, that one of them is much smaller than the other. This is accounted for in this manner: As the forming drop receives accretions from above, it elongates until the accumulating weight becomes too much for the cohesion of the particles of oil, and it breaks away. But it does not break off smoothly, but draws after it a tail like the stem of a pear. This stem then separates from the larger mass below, and both form themselves into spheres. The first and larger drop falls upon the fluid beneath, and swims thereon. The smaller drop falls upon the larger, and rolls rapidly down its side and away. Thus we account both for the two drops and for their disparity in size. We next observe that when two spheres approach sufficiently near they seem to be attracted by each other, and will coalesce into one larger globule. The question naturally arises, Why should the tension of the globules be sufficient to keep them from joining the fluid beneath, but not to prevent them from joining each other? The reason seems to be that each globule swims in the bottom of a cavity, or depression, which is equal in bulk with the globule. Now when two globules approach each other their depressions will begin to coalesce, and the globules will be driven toward each other, or, in other words, will roll down hill to the centre of their combined depression. This shock combined with the fact that the opposing surfaces of the two spheres are very small) forces a rupture of their skins, and a juncture of the two results. We next observe that a ball will sometimes appear to suddenly shrink to a fraction of its former size. This is a rather uncommon behavior, but diligence will reward the student with this, at first sight, inexplicable phenomenon. If we watch attentively the behavior of a ball when it bursts, we will see that there is always an attempt to reproduce itself upon a smaller scale, after the following fashion: If we throw a bullet into a pond of water, it, in sinking, first sends out a wave; then, as it falls down, it leaves a cavity, and the water, rushing in to fill up the depression, meets at the centre, and a column of water is projected upward. The same process happens on a small scale when a water ball coalesces with the fluid below First a wave is driven outward; then, as the globule sinks, it forms a depression. The fluid then rushes in: a minute column is projected upward, and divides into one or more fragments, which, upon falling back, sometimes assume the spheroidal condition and float—all being done so quickly as to leave the impression that the first globule had shrunken to its latter condition.—*Popular Science News.*

WISE SUGGESTION.—A timely suggestion has been offered by a German physician that the date of original preservation be stamped upon each and every can or package containing meat foods. It is held that preserved meats, hermetically sealed, may remain wholesome for a year or so, but that there is danger in the use of such foods after this period.

Indigestion

Horsford's Acid Phosphate.

A preparation of phosphoric acid and the phosphates required for perfect digestion. It promotes digestion without injury, and thereby relieves those diseases arising from a disordered stomach.

Dr. E. J. WILLIAMSON, St. Louis, Mo., says: "Marked beneficial results in imperfect digestion."

Dr. W. W. SCOFIELD, Dalton, Mass., says: "It promotes digestion and overcomes acid stomach."

Dr. F. G. McGAVOCK, McGavock, Ark., says: "It acts beneficially in obstinate indigestion."

Descriptive pamphlet free.

RUMFORD CHEMICAL WORKS,
PROVIDENCE, R. I.

BEWARE OF SUBSTITUTES AND IMITATIONS.

Caution:—Be sure the word "Horsford's" is *printed* on the label. All others are spurious. Never sold in bulk.

Fine Table Wines

From our Celebrated Orleans Vineyard.

Arpad Haraszthy & Co.

Producers of the

ECLIPSE CHAMPAGNE,

530 Washington St. SAN FRANCISCO.

GENERAL AGENCIES:
NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOSEPH R. PEEBLES' SONS CO., 73 West Fourth Street
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave
HONOLULU, H. I.: HAMILTON JOHNSTON.



Absolutely the Best.

A pure cream of tartar powder. All the ingredients used are pure and wholesome, and are published on every label.
One trial proves its superiority.
CLEVELAND BAKING POWDER CO.,
81 and 83 Fulton St., New York
DR. C. N. HOAGLAND, *President.*

25 CTS PISO'S CURE FOR CURES WHERE ALL ELSE FAILS. Best Cough Syrup. Tastes good. Use in time. Sold by druggists. CONSUMPTION 25 CTS



A HIGH-GRADE PIANO

AT A VERY MODERATE PRICE.

NEW DESIGNS. FANCY WOODS.

Terms Easy. + Monthly Instalments.

TWO, THREE AND FOUR PEDALS.

Catalogues, Prices, Terms, Etc., sent to any address.

EVERY PIANO WARRANTED 5 YEARS.

(Mention this Paper.)

DETECTIVE! WE WANT A MAN IN every **locality** to act as **Private Detective** under our instructions. Send stamp for particulars.
WASHINGTON DETECTIVE AGENCY,
Box 787. Washington, Iowa.

JUVENILE TYPE-WRITER 40c.
AND PRINTING OUTFIT, POSTPAID, ONLY
Will last for Years. Writes Letters and Correspondence. Prints Cards, Labels, Envelopes, Linen, &c. No loose letters to get lost. Useful Invention. Club of 3 for $1.00, 7 for $2.00. Retails for 85c.
IMPERIAL P. & P. with name 10c. Club 14 for $1.00 Post Paid.
THALMAN MFG. CO., No. 269 Balt. St., Baltimore, Md., U. S. A.

THE ORIGINAL AND GENUINE
(WORCESTERSHIRE SAUCE).

LEA & PERRINS' SAUCE



In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—

Lea & Perrins

Beware of Imitations; see that you get Lea & Perrins'

For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS. NEW YORK.

FOREST AREA.—The total forest area in the United States is estimated at 481,764,599 acres.

LONG WHISPER.—The most novel of the late telephone inventions has a glass diaphragm resting on glass rods, and communicating with the ordinary wire. It is claimed that a whispered conversation has been carried on intelligently over a distance of three miles on the trial instrument.

COMBINED EFFORT.—More than 300 different industries, says the *Southern Lumberman*, enter into the building of every ocean steamship. To build a 2,500 ton steamship requires 600 men in direct and constant employment, averaging $500 per man. The sum of $300,000 is thus distributed to the trades.

PRUSSIAN LONGEVITY.—Statistics of longevity just published by the German Government show that in 1888 there were ninety-one persons in Prussia who were over a hundred years old, and between 1864 and 1888 upwards of seven thousand persons of over a hundred died, and of these one hundred and fifty-five were more than one hundred and nine.

NO USE FOR A HUSBAND.—A Williamsport girl, who in the matter of beauty and affectionate exuberance was not to say "fresh as first love and rosy as the dawn," was asked why she did not get married, and this is what she said in reply: "I have considerable money of my own, I have a parrot that can swear, and a monkey that chews tobacco, so that I have no need of a husband."

IMPORTANT INVESTIGATION.—The Committee on Public Health of the Massachusetts Legislature recently passed a resolution that the State Board of Health should undertake an investigation into the dangers to human life and health arising from tuberculosis in the food products of cattle. It was recommended that authority be given to spend a sum not exceeding $15,000 on the inquiry."

GERM MULTIPLICITY.—Dr. Dowd, of New York, has been making a careful study of the number of germs found in the soil, which is known to be everywhere swarming with these minute organisms. The number of germs present in a cubic inch of soil was found to vary from sixty thousand to two and one quarter million.

HANDY MEASURE.—An ingenious device for measuring distances, and which will be likely to interest architects and builders, is an invention of an English firm. It consists of a small revolving wheel which operates a spindle, the revolutions being accurately registered by a dial counter. By running the distance wheel along a wall or other surface the recorder will show how many feet have been measured. There is practically no limit to the distance that may be determined by this little device.

FINGER NAILS.—A eminent German bacteriologist has recently been studying the impurities found under the finger nails, and has discovered abundant evidence to support popular idea that there is something particularly poisonous about the scratch of the nail. In seventy-eight examinations made by the authority referred to, more than fifty different kinds of germs, besides various sorts of mold spores, were found present. These experiments emphasize the necessity of frequently and carefully cleaning the finger nails.

INSURANCE AND ELECTRICITY.—The prejudice that seems so often to be carefully worked up against the electric light on the ground of danger from fire is found bottomless wherever there is the least regard for ordinary precaution, as with every other agent of use to man. Several thousand houses in Philadelphia have the electric light, and the inspector there in his last annual report states that there was not a single fire or a single dollar lost. Still more striking is the evidence from the electric light companies themselves. Until about a year ago, fire companies refused to insure central stations except at ridiculously exorbitant rates. The station took the matter in hand and formed a mutual company. The showing is simply magnificent, and the company is on solid basis, while insurance from outside is now offered them at the ordinary rates. The mutual company, moreover, is setting a high standard of construction, so that its losses should tend steadily to a minimum.



IMPERIAL GRANUM is the favorite food for children and invalids.
The Medical World, Philadelphia, Pa., May, '90.

IMPERIAL GRANUM is a good and well made powder of pleasant flavor. * * Contains no trace of any impurity.—*The Lancet, London, Eng., July 12th, '90.*

IMPERIAL GRANUM is a food that has attained a high and standard reputation by the merit of actual use for a long period of time.—*Medical Summary, Philad'a, Pa., July, '88.*

IMPERIAL GRANUM has withstood the test of time, and is to-day unexcelled by any dietetic preparation on the market.—*Medical & Surg. Jn'l, Atlanta, Ga., Feb. '89.*

IMPERIAL GRANUM has been before the public for many years, and is admitted to be a standard preparation. There can be no doubt that this is due to its uniformly superior quality, and the successful results obtained with it in all cases where a prepared food is required.—*Popular Science News, Boston, Feb. '88.*

IMPERIAL GRANUM is one of those carefully and conscientiously prepared foods that never disappoint the doctor in its administration. We have never seen a stomach that could not retain it, no matter how inflamed it might be. It will at once be seen what a valuable aid this is to the physician in the treatment of all the graver forms of gastric diseases.—*The Prescription, Feb. '91.*

IMPERIAL GRANUM has been on the market for many years, and its sales are constantly increasing. The greatest possible care is used in its manufacture, as we can testify, having visited the factory. Absolute cleanliness prevails, and the greatest care is taken to have the product absolutely uniform. The fact that physicians almost universally recommend it is sufficient proof of its standard quality.—*The Christian Union, New York, July 4, '90.*

Twenty-seven years ago last June IMPERIAL GRANUM was recommended to us by one of the leading physicians of Cincinnati, for a child whose life had been despaired of. We believe it saved the child's life, and it has been one of the articles necessary to have in the house ever since that time, and we have found it equally efficacious for the invalid and aged. It has steadily increased in popularity during all these years, and is to-day commended in the highest terms by leading physicians all over the world. There is probably no article on the market that receives so much care and attention in every detail of manufacture.
The Christian at Work, New York, Aug. 21, '90.

SOLD BY DRUGGISTS. Shipping Depot, JOHN CARLE & SONS, New York.

A LIGHT METAL.—It must be remembered that $1 a pound aluminum is really not so high as it looks, for the relation of a pound of aluminum to a pound of other metals is something like that famous pound of feathers to the pound of lead. Aluminum is almost three times as bulky as iron, weight for weight; it is nearly four times as bulky as silver and more than seven times as bulky as gold.

HIGH, BUT CHEAP.—Chicago will soon have the largest ten-cent lodging house in the world. The building will be seven stories high, will cost $85,000, and will be heated by steam and lighted by electricity. Each of the 360 rooms will be 7 by 6 feet, provided with iron bedsteads and hot and cold water. The floors will be of tile and the wainscoting of marble.

LARGE UMBRELLA.—The biggest umbrella in the world has been made for the use of a West African king. The umbrella, which can be closed in the usual manner, is twenty-one feet in diameter, and is affixed to a polished mahogany staff of the same length. The canopy is made of India straw, lined with cardinal and white, has a score of straw tassels and a border of crimson satin. On the top is a pine-shaped straw ornament which terminates in a gilded cone. When in use the umbrella is fixed in the ground, and under its shelter the king is able to entertain thirty guests at dinner.

THE NEW WEBSTER

Just Published. WEBSTER'S INTERNATIONAL DICTIONARY Cost $300,000.

SUCCESSOR OF THE UNABRIDGED.
Re-edited and Reset from Cover to Cover.
A GRAND INVESTMENT
for every Family and School.
Revision has been in progress for over 10 years. More than **100** editorial laborers employed. Critical examination invited. **Get the Best.**
Sold by all Booksellers. Illustrated pamphlet free.

Caution!—Cheap books called "Webster's Big Dictionary," "Webster's Encyclopedic Dictionary," etc., are being advertised. The body of these from A to Z is printed from plates made by photographing the antiquated 1847 edition. The authentic "Unabridged" (still copyrighted) and the new "International" both bear the imprint of
G. & C. MERRIAM & CO., Publishers, Springfield, Mass., U. S. A.

HOSMER, CRAMPTON & HAMMOND,

NO. 43 COMMERCIAL STREET,

BOSTON.

COMMISSION MERCHANTS,

HAY, STRAW. FLOUR & GRAIN.

E. B. HOSMER, G. W. CRAMPTON, BENJAMIN HAMMOND, A. L. ROBINSON.

BOSTON HAY AND STRAW MARKET.

Hay, choice to fancy, in large bales	$13.50 to $14.50
Hay, choice to fancy, perpetual pressed bales	13.00 to 13.50
Hay, fair to good	11.00 to 12.50
Hay, poor to ordinary	9.00 to 11.00
Hay, Clover and Clover mixed	10.00 to 11.00
Hay, swale	8.00 to 8.50
Straw, Rye, good to prime	17.50 to 18.00
Straw, Oat	8.00 to

BOSTON, May 2, 1891.

Receipts for the week are 176 cars of Hay and 13 cars of Straw; corresponding week last year, 234 cars of Hay and 20 cars of Straw. The market for hay is quiet without any special change to note from a week ago. Receipts and demand are both moderate. As is usual at this season, there are some cars of hay coming out in pretty badly damaged condition from heating; such is only salable at very low prices. Rye straw is steady. Very little demand for oat straw.

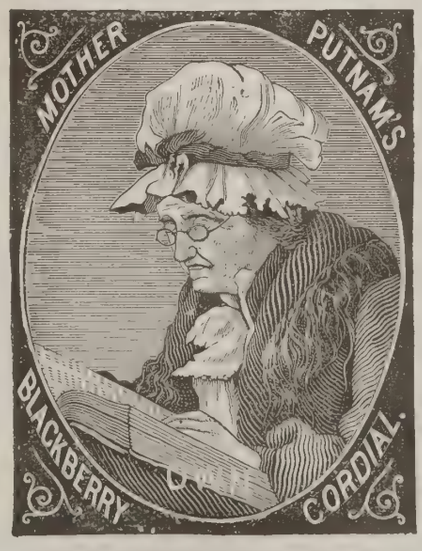
H. F. WILSON,
WIRE BALE TIES,
458 WEST 38th STREET, New York.

THURSTON'S IVORY PEARL TOOTH POWDER
WILL KEEP THE TEETH IN PERFECT CONDITION AND THE GUMS HEALTHY.
Price 25 & 50 Cents PER BOTTLE.

NATURAL MINERAL PURGATIVE WATER.
From the Springs of
VILLACABRAS.
Prescribed by the Highest Medical Authorities.
Stronger effects than any other under smaller volume. No smell—no repulsive taste—no after-constipation—no gripes. As a daily laxative it can be taken either pure or mixed with milk, tea or broth.
Sold by all Good Druggists.

HARTSHORN'S SELF-ACTING SHADE ROLLERS
NOTICE SCRIPT NAME OF *Stewart Hartshorn* ON LABEL, AND GET THE GENUINE
HARTSHORN

HAMMOND'S
CELEBRATED
Calumet Oleomargarine
Strictly pure, cheap and healthful.
Ask your grocer for it.
Put up in packages of all sizes, also prints and rolls.
C. H. HAMMOND CO.,
607 to 615 THE ROOKERY,
CHICAGO.
Also offices at Boston, South Omaha, Neb., and Hammond, Ind.



C-U-R-E-S
DIARRHŒA, DYSENTERY,
MALARIA,
all ailments of the bowels. Is an anti-dyspeptic, and a **DELICIOUS INVIGORATIVE.** Leading Physicians prescribe it for **ADULTS AND CHILDREN.** *FOR SALE* by Druggists and dealers.
RHEINSTROM BROS., DISTILLERS OF FINE LIQUEURS,
54, 56, 58, 60, 62 E. 3rd STREET, CINCINNATI, O.

GOLD MEDAL, PARIS, 1878.
W. BAKER & Co.'s
Breakfast Cocoa

from which the excess of oil has been removed,
Is Absolutely Pure and it is Soluble.
No Chemicals
are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.
Sold by Grocers everywhere.
W. BAKER & CO., DORCHESTER, MASS.

We can save you Fifty Dollars when you Build. See

A complete set of Plans to build from, simply state about price of dwelling desired. 25 cts. in stamps. Our book "Beautiful Homes," 25 cts. Our monthly book "The National Builder," 25 cts. Address
The National Builder, Adams Exp. Bldg., Chicago, Ill.

THE GREAT AMERICAN TEA COMPANY

LADIES

GET UP ORDERS.
Entire New Departure.
A HANDSOME PRESENT TO EVERY SUBSCRIBER.

THE GREATEST INDUCEMENTS EVER KNOWN TO INTRODUCE OUR NEW GOODS.

If you enjoy a cup of **Delicious Tea** send in your orders. 3½ lbs. Fine Tea by mail on receipt of $2 and this "ad". Beautiful premiums given away with $5 orders and upwards. The **most extraordinary bargains** ever offered, during the next thirty days. China Tea Sets and Lamps with $10, $15 and $20 orders to introduce our excellent **New Crop Teas.** Formosa and Amoy, Oolong, Congou, English Breakfast, Japan, Imperial, Young Hyson, Gunpowder, Sun Sun Chop and Mixed. Good mixed teas 20c. per lb. Headquarters in United States for Fine Teas. One pound of our tea will go farther than three pounds of trash. Thirty years' national reputation for selling **Pure Goods Only.**

THE GREAT AMERICAN TEA COMPANY,
P. O. BOX 289. 31 and 33 Vesey Street, New York.

PUBLICATIONS OF THE

ANALYST PUBLISHING CO.

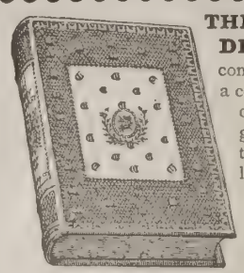
THE AMERICAN ANALYST.
Weekly. Every Thursday. $1 per year.

THE ROOFER, TINNER AND SHEET-IRON WORKER.
Monthly. 15th each month, $1 per year.

THE LEATHER MANUFACTURER.
Monthly. 1st each month. $3 per year.

Reliable agents and representatives wanted everywhere on liberal terms. Address

ANALYST PUBLISHING CO.
19 PARK PLACE, NEW YORK.



THE CENTURY DICTIONARY

comes nearer to being a complete catalogue of the English language than any dictionary ever published. But it is not merely a dictionary: it is an encyclopedia of common things as well. It has been ten years in preparation. The leading scholars of the country have contributed to its pages. It is the latest dictionary and it ought to be, and is, the best.

A large descriptive pamphlet containing full-size sample pages, etc., will be mailed to any one sending five 2-cent stamps to
THE CENTURY CO., 33 East 17th St., New York.

A LARGE AND VALUABLE

Cook Book Free



We are enabled to offer our readers a most attractive combination, by which all may obtain a copy of the "Modern Cook Book" absolutely free. This handsome and valuable Cook Book has

320 Pages, Over 1,200 Recipes and Hundreds of Illustrations.

The recipes are the choicest selections from 20,000 that were received from practical housewives living in all parts of the United States, to which were added hundreds of the newest, best and most practical recipes of this progressive age, all of it set in new and large type, and the whole book handsomely illustrated.

IT HAS A BEAUTIFUL, ILLUMINATED COVER.

It is an elegant and admirably arranged volume of recipes for practical, everyday use. Among its points of excellence are the following:

Practical Suggestions to Young Housekeepers, Necessary Kitchen Utensils, Suggestions and Recipes for Soups, Fish, Poultry, Game, Meats, Salads, Sauces, Catsups and Relishes, Breakfast and Tea Dishes, Vegetables, Bread, Biscuit, Pies, Puddings, Cakes, Custards, Desserts, Cookies, Fritters, etc. Also for Preserves, Candies and Beverages; Cookery for the Sick, Bills of Fare for Family Dinners, Holiday Dinners, etc. A Table of Weights and Measures; Chapters on the Various Departments of Household Management and Work.

IT WOULD BE CHEAP AT $1,

As it is the Latest, Best and Most Practical Cook-Book Published, More Nearly Meeting the Wants of American Homes than any other.

Any person accepting our offer will receive this paper one year, and also that charming home journal, the Ladies Home Companion, one year, together with the Cook Book, all mailed, postpaid, for less than the regular price of the two papers alone.

The Cook Book is offered absolutely free to induce thousands of our readers to become acquainted with the Ladies Home Companion, the publishers looking to the future for their profit, as they believe you will always want the Ladies Home Companion if you try it one year. Do not lose this opportunity to get the newest and best Cook Book free.

THE LADIES HOME COMPANION is a large and popular 16-page journal, published **twice a month,** and gives information about those things which ladies particularly wish to know, and is mostly written by ladies. **Original or Selected Stories** by eminent authors are found in each issue. A special feature is the variety of departments, each of which is conducted by a special editor. It gives the latest **Fashions,** arranged for practical use; timely hints to **Housekeepers;** cheering and helpful talks with **Mothers;** valuable information for lovers of **Flowers;** a pretty and pleasant page for pretty and pleasant children. All handsomely illustrated. It is not an ultra fashion paper, but a journal for the home circle, full of common-sense ideas and suggestions for home happiness and comfort.

☞ **OUR OFFER** Send us $1.00 and you will receive **The American Analyst** one year, and also the **Ladies Home Companion** one year (24 numbers). And every one accepting this offer will also receive the above Cook Book, postpaid.

This offer is extended to **all** our subscribers. Subscribers whose subscriptions have not expired, or those recently renewed, are privileged to accept this GREAT OFFER, in which case their term of subscription will be extended one year.

Address THE AMERICAN ANALYST, 19 Park Place, New York.

"BILLET"

are

Carefully Selected

French Sardines,

Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS.

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,
HOWARD STREET, BOSTON, MASS.

To Subscribers, Readers and Advertisers.

SUBSCRIBERS' attention is called to the great variety of interesting and instructive subjects treated in this number. We respectfully ask the co-operation of our subscribers in extending our Subscription list, which will enable us still further to increase the value of the AMERICAN ANALYST to them.

The CASUAL READER is specially requested to examine our liberal premium offer.

ADVERTISERS who do not know of this Journal already, are respectfully referred to article headed "A Business Benefit."

ALL are kindly requested to peruse this number thoroughly.

The AMERICAN ANALYST can be had at any news stand in the United States. Any newsdealer will take orders for it, the American News Company being our wholesale agents. All postmasters will receive subscriptions.

Tabasco Pepper Sauce

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

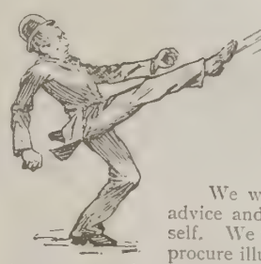
The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced, by connoisseurs, to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY,

NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

Don't kick



because your business is bad, but advertise If you don't know how to, write to us and we will tell you.

We will prepare your advertisement or give you advice and assistance to aid you in preparing it yourself. We will have the advertisement set in type and procure illustrations if any are needed. When a satisfactory advertisement has been produced we will furnish proofs and an electrotyped pattern to be used in duplicating the advertisement if the display or illustration make an electrotype desirable.

Address GEO. P. ROWELL & CO.,
Newspaper Advertising Bureau,
10 Spruce St., N. Y.

NATRONA BI-CARBONATE OF SODA.

(ABSOLUTELY PURE.)

The nature of the raw material from which NATRONA BI-CARBONATE OF SODA is made—viz., kryolith, a mineral containing *pure sodium*—insures a purity and uniformity of product which cannot be obtained from any other known material. In making BI-CARB. SODA from any other raw material, the use of sulphuric acid is a necessity, but none is used in any part of the process of making NATRONA BI-CARB.; hence its entire freedom from the slightest trace of arsenic, which is always present in ordinary soda. Its absolute purity and entire freedom from all traces of *sulphate of soda*, common salt and other impurities, render NATRONA BI-CARB. NEARLY TASTELESS, and being bolted through the finest bolting-cloth, insures the finest stage of division.

To these indisputable facts the attention of CONSUMERS of soda is specially called. They are IMPORTANT, and should influence both those who use and those who sell soda, to buy and sell NONE BUT THE BEST.

The NATRONA BI-CARB. Soda is kept in stock by almost every wholesale druggist and grocer throughout the United States, of whom it may be ordered.

Natrona Bi-Carb. Soda is unequaled by any other brand of English or American Manufacture.

PENNA. SALT MANUFACTURING CO.,
NATRONA CHEMICAL WORKS. PHILADELPHIA, PA.

ESTABLISHED IN LONDON, 1831.

DEAN'S PATENT Ardenter Mustard



W. G. DEAN & SON,
361 & 363 WASHINGTON STREET, 84, 86, & 88
NORTH MOORE STREET, N.Y.

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,
184 Greenwich St., N.Y.

INSTRUCTIONS TO SUBSCRIBERS.

The **Names of all Subscribers** are registered as soon as received, and paper is always promptly forwarded.

Postage.—The postage to all parts of the United States and Canada is paid by the publisher.

Remittances of small sums may be made with comparative safety in ordinary letters. Sums of one dollar or more must be sent by registered letter or P. O. money order, otherwise we cannot be responsible for same. Silver must not be sent in a letter.

Postage Stamps will be received for the fractional part of a dollar, and in any amount when it is impossible for patrons to procure bills, but you must send one or two-cent stamps only.

SUBSCRIPTIONS.—The AMERICAN ANALYST will be sent one year to any subscriber for ONE DOLLAR. New subscriptions can begin at any time.

We Stop the Paper at the expiration of the time paid for unless a renewal of subscription is received. Those whose subscriptions have expired must not expect to continue to receive the paper unless they send the money to pay for it.

Change of Address.—Subscribers wishing their addresses changed must invariably give their former as well as new address.

Missing Numbers.—It occasionally happens that numbers of our paper sent to subscribers are lost or stolen in the mails. In case you do not receive any number when due, write us a postal card and we will cheerfully forward a duplicate of the missing number.

Most Important of All.—In every letter that you write us, never fail to give your full address, plainly written—name, post-office, County and State.

Address all letters to

THE ANALYST PUBLISHING CO.,
19 Park Place, New York.

Vigoral

FOR

STRENGTH, NOURISHMENT AND REFRESHMENT.

PREPARED BY

ARMOUR & CO.,

CHICAGO,

From their celebrated EXTRACT OF BEEF, further strengthened in muscle-forming constituents by the addition of pure beef in powdered form.

Vigoral is seasoned ready for use and makes a delicious hot drink for cold weather.

SWIFT'S

CHOICE

Chicago Dressed Beef

AND

MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,

UNION STOCK YARDS,

CHICAGO, ILLS.

We shall be glad to supply our readers with any periodical published at club rates.

Send us a postal naming periodical and we will quote you prices.

ANALYST PUBLISHING CO.,
19 Park Place, New York.

GLENN'S

SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,

C. N. CRITTENTON,

115 FULTON STREET,

NEW YORK.

Be progressive and keep abreast of the times. Avoid dyspepsia by using **Lard Compound** and **Cottolene,** a substitute for lard.

The highest medical authorities pronounce them healthful; and expert cooks commend them.

Our **Clairette** brand of cotton oil soap is the purest and best laundry soap in the market; as pleasant to the hands as genuine castile.

N. K. FAIRBANK & CO.,

CHICAGO AND ST. LOUIS.

The Standard of Excellence.

KINGSFORD'S

OSWEGO

Pure and Silver Gloss



STARCH

KINGSFORD'S

OSWEGO CORN STARCH

FOR

Puddings, Custards, Blanc-Mange, Etc.

THE PERFECTION OF QUALITY.

WILL PLEASE YOU EVERY TIME.

Always ask your Grocer for these goods.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 20. NEW YORK, THURSDAY, MAY 14, 1891. WHOLE No. 220

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - $1 per year.
Single Copies, - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.

Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.

Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,

H. LASSING, M. D., T. P. McELRATH, } *Editors.*

No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

Aesthetic Hygiene 233
American Athletics 234
Beef Advancing 232
Caring for the Complexion 232
Domestic Dietetics 233
Earth's Last Day 231
Editorials 229
From Farm to Kitchen; Electric Exhibition; The Phosphate Industry; The Earth's Crust.
Energy 234
German Cookery 230
Labor and Humanity 232
Retort Scientific 235

FROM FARM TO KITCHEN.

The United States census office has recently issued some highly interesting statistics of truck farming in the United States, as distinguished from market gardening, which is conducted so near to the local market that the farmer depends on his own team for transportation. The average truck farm is situated a great distance from the market in which its produce is disposed of. It is a new feature introduced within the last few years, except the little which used to be possible by canal. It is the modern railroad that has rendered possible the truck farm, and this partly accounts for the fact of its neglect in previous census compilations. Not that there was no truck farming in 1880, but the volume of it was vastly less than now. It is estimated that upward of $100,000,000 is invested in the industry in the United States, the annual production being three-quarters of this amount, or $76,500,000, realized from 534,440 acres of land. In the work are engaged 216,765 men, 9,264 women and 14,874 children, who are aided by 75,868 horses and mules, and use nearly $9,000,000 worth of agricultural implements. The industry is carried on in nearly all the States, but the principal districts are a narrow belt on the South Atlantic coast and along the Mississippi Valley. The more fertile soils are chosen, labor and the railroad do the rest. The big cities are the best customers of the truck farmer, the wants of the people in the smaller centers of population being to a large extent supplied from the immediate neighborhood, and they take less per capita of that grown in other climates than their own. The vast increase to human comfort permitted by the enjoyment of the products of other areas than those which surround the consumer, and the concomitant benefit to the many who in this direction minister to the supply of what may be called necessary luxuries to their fellow creatures are the outgrowth of the present generation, which, by making railroad transportation far-reaching, speedy and cheap, has permitted the interchange of commodities on a scale that would never have been dreamed of by the people of fifty years ago.

ELECTRIC EXHIBITION.

A novel and instructive entertainment is to be initiated in the city of Frankfort-on-the-Main on the 16th of the present month in the shape of an International Electro-Technical exhibition. An explanatory circular that has come to hand announces that the exhibits will be in twelve classes. At the principal entrance of the main exhibition the historical division will illustrate the development of the telegraph and the telephone from the beginning. As the Imperial Government has placed its present apparatus, as well as its museums, at the disposal of the directors, this division is expected to be complete beyond anything of the kind before attempted. The telephones will be connected with the grand opera houses in Frankfort, Munich, and Wiesbaden, as well as with concert halls in distant German cities, so that every evening visitors may hear the best music of the artists of western Germany. The second division will contain examples of all such electric signals as are used on railways, on ships, in mines, and in the army. The exclusively marine features of this department will be in the marine exhibition on the Main. Two electric boats, one of which carries 200 persons, will ply on the river, which will be illuminated with an enormous electric light tower. A picturesque and popular part of the marine exhibition will be a waterfall, forty feet high, in a grotto lighted with electricity. Beyond the departments of electro-metallurgy and kindred industries the electro-medical and scientific apparatus will be grouped. All the results and means of Prof. Hertz's celebrated experiments in the nature and essence of electricity will be shown there. The space around the centre of the main exhibition will be occupied by the machinery hall, with its sixty motors of 4,000-horse power. Two or three motors of 500-600 horse-power each will be operated in the hall. An experiment in the transportation and distribution of electric power is awaited with keenest interest. A factory in Lauffen, 105 miles distant, has undertaken to furnish from that place 300 horse-power with which to operate lights and machinery. All sorts of industries, such as shoemaking, joinery, and dairying, will be prosecuted on the grounds. Every kind of an electric street railway will be in operation to convey visitors to and from the exhibition.

THE PHOSPHATE INDUSTRY.

We find in a recent issue of our Baltimore contemporary, the *Manufacturers' Record*, a full and interesting narrative of the development of the phosphate mining interests of Florida and South Carolina. Since 1889, when one company commenced to mine phosphate rock in Florida on a small scale, this industry has developed with wonderful rapidity, and the investments in phosphate lands have been on an enormous scale. The *Manufacturers' Record's* list of companies now operating there shows that over $12,000,000 has been invested within two years and that these companies now have a daily capacity of 2,000 tons of phosphate rock, which will be increased shortly to 3,000 tons by the completion of mining plants now under construction. In addition to these companies, fifty-one others, with an aggregate capital of over $21,000,000, have been incorporated to develop phosphate lands, but are not yet at work. In South Carolina there are twenty-eight phosphate mining companies, with an aggregate capital of $4,510,000, and the production last year was 537,149 tons. There are also eighteen fertilizer manufacturing companies in that State, having a capital of nearly $5,000,000.

THE EARTH'S CRUST.

A curious work is that which we read in the daily papers the government geological survey has undertaken—it is digging the deepest hole in the ground which has ever been attempted by man. This extraordinary aperture is located in the neighborhood of Wheeling, West Virginia. It is eight inches in diameter and has now reached a depth of 4,100 feet, or nearly one mile. No difficulties in boring have yet been encountered, and the work will be continued so long as human skill can devise means of going deeper. Interesting geological discoveries will doubtless be made, but the principal object of the survey is, if possible, to reach a depth that will throw some light on the question of the proximity of interior fires to the surface of the earth. Whatever may be the final results, the progress of their work thus far is rather reassuring. If no signs of fire can be discovered at the depth of a mile we should be willing to take the chances against an early terrestrial combustion.

HOSPITAL EXAMINATION.

An open competitive examination of candidates for Junior Assistant and Female Physicians in the New York State Hospitals for the Insane will be held by the State Civil Service Commission at the Capitol, in Albany, June 11th. Candidates must be residents of the State, and must have had one year's hospital experience, or three years' experience in the general practice of medicine.

GERMAN COOKERY.

A GLIMPSE INTO THE NATIONAL DISHES OF THE WORLD.

There are so many characteristic and interesting dishes peculiar to the German speaking races of Europe, that it will be necessary to devote two numbers of this series to the setting of them forth. In the first of the two will be considered the most substantial dishes, the heavy artillery of the dinner-table—meats stewed, braised and roasted; poultry, sausages, soups and so forth. In the second, the lighter brigade of puddings, cakes and entrées. German cooking methods—it is useless to deny it—have not found favor with the neighboring nations. With kitchen matters race has much to do, also those evolutionary processes that accompany civilization. Cooking in Germany is not abreast of that of the rest of Europe. Literature itself in Germany in its higher development is hardly a hundred years old, and it is not to be supposed that the sister art is more advanced. Lessing, Schiller and Goethe were the pilots and pioneers of German literature, but there has never been a German Carême or Vatel to show the way from barbaric roasting and seething to the refinement of sauces and *ragoûts*. Race, too, must tell. The keen Celtic sensibility which Mr. Grant Allen has been dwelling upon is employed when the Celt is a *gourmet* in culinary criticism, and that "magic" which Matthew Arnold found in the works of the great Celtic writers is found also in such works of the great Celtic *chefs* as their *supremes de Volaille*, their *epigrammes d'agneau*, and their *vol-au-vents à la financière*. In Germany this delicacy, lightness of touch, and, so to say, "magic" is altogether wanting. On the other hand, the German has a strength of imagination which has done great things in many domains. It is the Gothic strain, romantic, sombre for the most part, or grotesque with a Macabrie humor. It is needless to recount the outcome and triumphs of this great faculty of the German mind and heart in painting, in sculpture and in letters. In the kitchen, it must be admitted, that at times it runs riot. The most incongruous ingredients, which cooks of a colder fancy would almost shudder to combine, are poured into one saucepan, and result in compounds at the bare contemplation of which the outer world of non-German grows pale. Beer is poured into soup with carraway seeds; apples and sausages and currants are fried together and bedewed with claret; and, as if it were not enough to eat such strange dishes, the greatest of German statesmen habitually washes them down, so it is reported, with champagne in which brandy has been poured, or porter tempered by port wine. These surely are neither the meats nor the drinks of a weakling nation. Notwithstanding the apparent violence of some of these modes of coction, the dish is mostly better than the recipe, and some of them, hereafter to be set down, deserve to be widely known.

KLARE SUPPE MIT PARMESAN CROUTONS (CLEAR SOUP WITH PARMESAN CROUTONS).—Celery, turnips, carrots, green leaks or onions, and young cabbage-leaves, all cut in strips, are put in a stew-pan with a piece of butter and a little sugar, covered close, and left to stew in their own steam over a slow fire. Shake them occasionally till soft and yellow. If the vegetables are not quite young, they must be previously parboiled, else they impart too strong a flavor to the soup. Boil the vegetables thus prepared in good gravy soup, and then strain them away. Take slices of stale roll, and, with a small round cutter, no bigger than a shilling, cut out little cakes, dip them in hot butter and roll them in grated Parmasean cheese. Bake them a bright yellow color. Throw these croutons into the soup at the moment of serving.

FISH SUPPE, WEISSE (FISH SOUP, WHITE).—Use any kind of fish; wash it well and set it on the fire in enough cold water to cover it. Add a small stick of celery, an onion or two, a few sprigs of parsley, a bay leaf, six cloves, and a spray of ginger. Cover close and leave it to simmer for an hour; then add sufficient water for the quantity of soup required. Let it all boil up together, strain it, add a cup of cream, and add salt and white pepper to taste. Fry as many eggs in butter as there are people at table; lay them in the tureen, pour over the soup, and serve with small toasted or fried sippets of bread. This soup may be made brown by leaving out the cream, using black pepper instead of white, and adding a browning, made in a stew-pan, with butter, sliced onion and flour; toast some very thin slices of bread a dark brown and put them in with the browning. Finish the soup as above.

KLOSTER WEIN SUPPE (MONASTERY WINE SOUP).—Boil a quarter of a pound of rice in a pint and a half of water until quite soft, and with it the thin yellow rind of a lemon. Add, by degrees, a bottle of any white wine. Sweeten with three or four ounces of sugar, and whisk in the yolk of four eggs when ready to serve.

BIER SUPPE MIT KUMMEL (BEER SOUP WITH CARRAWAYS).—A couple of rolls or small slices of brown bread must be boiled soft in a little water, then strained and beaten smooth. Add grated lemon-peel, sugar, spice, a large teaspoonful of carraway-seeds and three pints of ale. Boil all together, and, when ready for serving, pour the soup into a tureen, in which are the beaten yolks of four eggs, into which it must be stirred briskly.

SCHAUM MILCH SUPPE (FROTHED MILK SOUP).—Pound six bitter almonds and boil them in two quarts of milk; or, instead of the almonds, use half a stick of vanilla. Add sugar to taste and a little salt. Beat separately four eggs; the whites must be whisked to a stiff snow, then mixed with the yolks. Let the milk just cease boiling, and whisk in the eggs till it froths well; but this must not be done over the fire or the eggs will curdle. Serve with small sponge biscuits.

PANADA SUPPE (PANADA SOUP).—Cut three or four rolls in slices, and put them on the fire in cold water. When the bread has boiled a few minutes, pass it through a sieve, and set it again over the fire. Beat three ounces of butter to a cream, and add it to the panada when it boils, stirring it well in. Take it off the fire and stir in the yolks of four eggs, beaten with a half a pint of cream or milk, a little nutmeg and salt. It must not boil again.

PFLAUMEN SUPPE (PLUM SOUP).—Brown some flour in butter, stir in water to make it thinner, and put in plums, with some cinnamon or cloves. Let them boil to a mash, strain them, and add sugar with equal parts of wine and water, a pint of each to a pound of plums. Throw in a few whole plums, and simmer again till these are soft, but not broken. Add slices of toast a minute or two before serving. Cherry soup can be made in the same way, and is improved by breaking some of the stones and putting the kernels into the soup.

GEBRATENER HECHT MIT SAURER SALUE (BAKED PIKE WITH SOUR CREAM).—Cut the pike into neat slices and place them in an earthen baking dish with some butter at the bottom of it. Divide two bay leaves into pieces, and put them, with slices of onion, between the pieces of fish. Strew with salt and pour over half a pint of sour cream. Bake about twenty minutes in a quick oven, basting at intervels. Then strew over some fine bread crumbs, and grated Parmesan cheese; bake a few moments more until delicately colored. Dish the fish without breaking the slices, but take away the bay leaf and onion. Pour enough stock or hot water into the baking-dish to make a sauce; add pepper, sauce, lemon juice or vinegar; stir it well round the crusting and pour over the fish.

FORELLEN (TROUT).—To boil these, as indeed several other kinds of fish, put vinegar, sauce, sliced onion, bay leaf, spice and pepper into the water. Let this boil to get the flavors from the bay leaf, etc.; set it aside to cool a little; then lay in the fish and simmer slowly till done. Garnish and serve with any approved sauce.

SARDELLEN BUTTER (SARDINE BUTTER).—Wash a dozen sardines quickly in cold water, scrape off any scales and take the bones out. Pound the prepared fish in a mortar with a piece of fresh butter, adding by degrees more and more butter till half a pound is mixed in. Add some cayenne pepper and plenty of salt, and work the whole into a smooth paste, which must then be pressed into a jar or small potting-pan. If the sardines in oil are used they need not be washed; only the fresh fish need that. Sardine butter is excellent for sandwiches or spread on toast. Anchovies may be prepared in the same way.

SAUERBRATEN, OR ESSIG SCHMORBRATEN (SAVORY ROAST BEEF).—Lay a piece of beef in a deep dish, and pour a cup of vinegar over it. Let it remain in this form two or four days, turning and basting it every day. To prepare it for cooking, wipe it dry; cut strips of fat bacon the size of a little finger, roll them in a mixed seasoning of salt, pepper and pounded cloves. Make holes in the beef with a large skewer, and put in the pieces of bacon. Make some butter hot in a stew-pan just large enough to hold the beef; put the meat in and set it over a brisk fire, letting the steam escape to hasten the browning. Dredge it with flour, and turn it when one side is brown. When the meat is nicely colored, add about a pint of water, a couple of carrots quartered lengthways, a large onion or two sliced, two or three bay leaves, a teaspoonful of whole pepper, a blade of mace, the quarter of a lemon rind and a good sprinkling of salt. Cover closely, and let it steam slowly from two to three hours, adding a little water when necessary. When it is ready for serving, take the meat out of the stew-pan, and keep it hot while the fat is skimmed off and the gravy strained. The unbroken carrots may be laid round the meat. If the sauce requires to be more acid, add lemon juice or vinegar, thicken it with a little flour, give it a boil up, pour a little over the meat, and serve the rest in a sauce tureen.

GEFULLTE KALBSBRATEN (ROAST VEAL STUFFED).—Have a good fillet or loin of veal; beat it well, and rub it with salt. Make a forcemeat with half a pound of veal, half a pound of bacon minced fine with a small onion or shalot, a few sprigs of parsley, an ounce of capers, some grated lemon-peel, a little finely-powdered thyme or very little winter savory, a small cup of bread crumbs, salt, pepper and the yolk of three eggs. With this fill the most suitable part of the fillet or loin, and put the meat into a deep stew-pan with rashers of bacon under and over it, or rashers of bacon under and pieces of butter on the top. Let the meat brown on all sides, then add rather more than half a pint of water and an onion with six cloves stuck in it. Baste the meat often till thoroughly done. Should the steam at first retard the browning, do not keep the cover close, but it must be kept on after the water is put in. Skim and strain the gravy for serving with the meat.

GEBACKENE HUHNER (FRIED CHICKEN).—Young chickens only can be used for this. They should be washed clean and cut up, if small, into four, and if large, into six parts. Season with salt and a little pepper, roll them in flour, egg and breadcrumb them, and fry. Garnish with fried parsley, and serve. They may be eaten with mayonnaise sauce, which should be sent up in a sauce-tureen.

BRATWURST MIT APFELN (SAUSAGES WITH APPLES).

—Peel and core six or eight large apples, cutting each one in four quarters only; strew sugar and a little powdered cinnamon over them, and let them stand for two or three hours. Wash two ounces of currants and leave them to swell in warm water. Make a piece of butter hot in a stew-pan, and lay it in a pound of sausages, having first pricked them all over to prevent their breaking. Lay the apples between and on the sausages, and sprinkle the currants over. Cover close and let them fry gently. Turn the apples carefully when one side is done, and when they are quite cooked take them out and keep them hot. Turn the sausages until well done, then pour a wineglass of claret into the stew-pan; stir it round the crusting and make it hot. Dish the sausages in this sauce and lay the apples neatly round them.

KARTOFFEL SALAT (POTATO SALAD).—Small potatoes, which are wasteful to peel and cook with larger ones, should be sorted out for salads. Boil them in their skins, and while warm peel and slice them thin. Mince chilies, parsley or onions very fine, and strew it over the potatoes in the salad bowl. Sprinkle them with salt and pepper, pour over two or three spoonfuls of oil, and moisten the whole with vinegar and water mixed, that it may not be too sour. Several things may be mixed with the potato salad to give it flavor and variety, but only one should be added and mixed with the potatoes before the oil and vinegar are put in. Slices of pickled beetroot, a fresh cucumber, a Dutch herring cut up small, or a few sardines mixed may be used with advantage.

HÄRING SALAT (HERRING SALAD).—No precise quantities or proportions can be given for this excellent and favorite salad, as the ingredients may be varied according to taste. Good, white barrelled herring must be chosen—the Dutch are best. Lay them in water or milk for an hour or two to take out the salt, then open them, take out the bones, and cut them in small, thin slices, or chop them. An equal quantity of finely-minced cooked veal or other white meat is often added to the herring. Stir a small piece of butter to a cream, add to it some white or cayenne pepper, mustard, a little white sugar, oil and vinegar. Have ready, for a salad of two herrings, half a dozen potatoes, boiled and cold, as for potato salad. Cut them into small dice, and also some sour juicy apples, about as much in proportion, when minced, as the herrings. First stir the dressing well in with the fish, then the apples and potatoes lightly. The salad should be a little moist; if too dry or too sour, add some milk, or a little stock or broth. Some chopped chives or shalot is an improvement if the flavor is not objected to.

EARTH'S LAST DAY.

CAMILLE FLAMMARION GLANCES A FEW MILLION YEARS AHEAD.

The earth had been inhabited for about twenty-two million years. The primordial age had taken not less than ten million years to go through its several phases. The primary age had occupied more than six millions; the secondary age two million, three hundred thousand years; the tertiary age, half a million years; the primitive human age, the time of national divisions, of barbarism, and of militarism, had filled about three hundred thousand years, and the sixth age, that of intellectual humanity, had reigned for nearly two million years. During that long succession of ages the earth had grown older, and the sun colder, and in consequence the geographical aspect of the globe had metamorphosed itself, the water of the ocean had slowly penetrated through the earth's crust; the sea was contracted to a fourth of its area in the early human period; warm valleys and equatorial regions alone were habitable. All the rest was frozen. From century to century, humanity had attained forms of exquisite beauty, and no longer worked materially. A network of electricity covered the globe, producing at will all that was needed. It was then a unified race, entirely different from the rude and heterogeneous races that had characterized the first period. About the year 2,200,000 after Jesus Christ, the last great focus of human civilization shone in the centre of equatorial Africa, in the brilliant city of Suntown, which had already several times been raised again from its ashes. The sites where Paris, London, Rome, Vienna, and New York had stood were then buried beneath the ice. The capital of this aristocratic republic had attained the last limits of a luxurious and voluptuous civilization. Wives no longer became mothers unless by accident, they no longer desired the inconvenience of maternity, and reigned in all the splendor of their unblemished beauty. Life had been, if not dried up at its source, at least rendered irremediably unfruitful. No young women remained; the soil, too, was sterilized, and the generation saw the end approaching. In this dilemma, an aerial flotilla was constructed and all the strong men started on a voyage of investigation of the whole equatorial zone, to see whether any isolated human groups still existed. The entire earth had almost disappeared beneath snow and ice, and already half the members of the expedition had died of hunger and cold, when the survivors discovered a human settlement on the banks of an unfrozen river. They were received as saviors by men who believed themselves the only survivors of terrestrial humanity, looking on with despair at the last days of the world. The river, on whose banks they were camped, was the once famous Amazon. The last woman of the community was already dead, the wine and the grain were extinct, and the men subsisted solely on fish. On hearing this, the guests were in despair; their country was still wealthy, science rendered them independent of soil and natural temperature, and the leader of the party exclaimed: "We came in search of female associates, and had we found but one single wife, all the riches of our land would have been hers." Some time before these events happened in Africa and America, the island of Ceylon, now attached to Asia, was the last refuge of the human in Asia, and there, in this former earthly paradise, not far from the equator, at the foot of Adam's Peak, dwelt twelve women, sole heiresses of the last unextinguished families. The male sex had completely disappeared. The youngest of the females, little Eva, was three years old. The decline of natural forces had brought about a decline of human forces, and with it the decline of inventions and usages which had formerly seemed so indispensable. Crossing the Pacific Ocean, our adventurers observed that Ceylon was freer from ice than other regions, and on approaching it, they saw to their joy a group of five women in mourning, the then last survivors of the race in Asia. They alighted, told the object of their explorations, and had no difficulty in convincing the fair Asiatics. Their despair disappeared like a mist; and a few hours after the arrival of the aeronauts the five nuns had become the most elegant of women. But Ceylon was more desolate than Suntown; provisions were scarce, and the whole party, taking the women with them, returned to their African home. Arrived there, they found that the friends and relatives they had left behind were all dead or dying from an epidemic; the cold, too, was increasing; and, although they kept up fires and shut off all communication with the outer air, death was busy among them until, at the end of a few weeks, all had passed away save only the youngest woman, Eva, her lover Omegar, who saw without delusion the inevitable fate which awaited them, well knowing that no other spring would ever bloom on earth. However, the sky cleared, and the young couple, taking all the provisions available, rose in their aerial boat to judge of the last invasions of the snow, and saw that the whole city was buried. They then started for the Nile Valley, and on reaching it saw with delight that the Great Pyramid was still standing, the last evidence on earth of the work of man's hands. There they found shelter among the ruins, and, folded in each other's arms, took their last look at earth; and, murmuring eternal love to each other, they sunk into the sleep of death. And the snow continued to fall, as a fine powder, on the surface of the earth. And the earth continued to revolve on its axis, and to float through the immensity of space. And the sun continued to shine, but with a redish and barren light, and stars continued to scintillate in the immensity of the heavens. And the infinite universe continued to exist, with its billions of suns, and its billions of living or extinct planets. And in all the worlds peopled with the joys of life love continued to bloom beneath the smiling glance of the Eternal.

PRE-HISTORIC LONDON. — Three Chaldean monuments of antiquarian value were recently discovered under the foundation of an old London house. The site was formerly occupied by the dwelling of a Dutch merchant who traded in Persian ports. At the time of the great fire the stones probably fell through the ruins by their weight, and escaped notice when the house was rebuilt. They belong to the pre-Semitic age, and the characters upon them are of the most archaic form.

NATURAL COKE.—A remarkable discovery has recently been made near Ooalaska, Alaska,—coal transformed into coke solely by the forces of nature. The locality has been taken up by the steamship company. So positively assured is the company of the extent of the deposit that it has undertaken to supply the local demand, in addition to furnishing during future seasons fuel not only for its own steamers but also for those of the government service.

BOTTLE STATISTICS.—It is computed, in recently made statistics, that the glass bottle production of the world amounts to a daily output of a little over eleven million bottles. Of these, Germany, Belgium, and Austria-Hungary make more than three-fourths, England and Sweden coming next, while the production of France and the United States combined is said to be quite inconsiderable in comparison.

NEGRO PHYSICIANS.—The fifteenth anniversary of the Meharry Medical Department of Central Tennessee College was held February 19th. The Nashville *Journal of Medicine and Surgery* says that more than one-half of the educated colored physicians of the Southern States are graduates from Meharry College. With scarcely an exception, they have been cordially received by the white physicians, who have consulted with them in dangerous cases, and assisted in difficult surgical operations.

SHELLING PEAS.—An Albany firm has gotten out a patent on a device for shelling peas. The novelty about this machine is that the peas are cut down like wheat or barley, and the vine and pea are all fed into the machine, which separates the green pea from the vine and pod perfectly fine and clean. The machines are large, being sixteen feet long, eleven high and six wide. The company do not sell these machines but let them out on a royalty, and they are in great demand in all places where canned goods are put up as they make a very great saving in the harvesting of peas.

RAZOR FREAKS.—The finest grades of razors are so delicate that even the famous Damascus sword blades cannot equal them in texture. It is not generally known that the grain of a Swedish razor is so sensitive that its general direction is changed after a short service. When you buy a fine razor the grain runs from the upper end of the outer point in a diagonal direction toward the handle. Constant strapping will twist the steel until the grain appears to be straight up and down. Subsequent use will drag the grain outward from the edge, so that after steady use for several months the fibre of the steel occupies a position exactly the reverse of that which it did on the day of purchase. The process also affects the temper of the blade, and when the grain sets from the lower outer point toward the back, you have a razor which cannot be kept in condition, even by the most conscientious barber. But here's another curious freak that will take place in the same tool: Leave the razor alone for a month, or two, and when you take it up you will find that the grain has assumed its first position. The operation can be repeated until the steel is worn through to the back.—*Manufacturers' Gazette.*

CARING FOR THE COMPLEXION.

SOME PRACTICAL SUGGESTIONS ON AN IMPORTANT THEME.

A writer, evidently of the fair sex, and therefore best qualified to discuss the subject, expresses herself on the subject of preserving the complexion, in the *Soap and Perfumery Journal* of this city, as follows: "There has never been a great beauty who had not a fine, smooth skin. It may not have been rosy or fair, it may have been that most exquisite of tints, a clear olive. But it was at least free from spots and imperfections and sufficiently fine to show the veins under it. She may not tell it, but every woman whose skin keeps good takes care of it. A perfect complexion is like a fine bit of china; it needs continual consideration, and though it is not kept under glass it must be treated all the more carefully because of that fact. The spring and the early summer months are essentially the time to get one's complexion in good order, the danger of catching cold from various simple medicines not beingso great as during the cooler days. There is nothing so good for the skin as what the English people call "brimstone and treacle," but which Americanized becomes "sulphur and molasses." Five cents' worth of sulphur, with enough molasses mixed with it to make it of the consistency of custard, is the prescription; take a teaspoonful every morning three days in the week and then stop three. It is just possible that for a while you may be spotted like the leopard," but these spots will soon disappear and your skin will be as white, smooth and delicate looking as that of a new-born baby. Dr. Erastus Wilson, the great authority on the care of the skin, evidently believed in the advantages to be derived in the liberal use of lemons. As a beverage, and also, diluted with rain-water, as a cooling wash for the face, he places them before everything else; therefore, if used with liberal discretion, lemons may be cited as a valuable medicine, and aid to the woman who wishes to make her complexion clearer. A wash for the face, recommended alike for freckles and tan, is composed of two parts of lemon juice of Jamaica rum. This should be dabbled on the face with a piece of soft linen, and may be so applied several times during the day and just before retiring at night. If the skin evinces a tendency to look dull a tonic should be applied, and a little gin in the water used for bathing the face is about the best that can be procured; it reanimates the skin, and in addition is very cleansing. A box of powdered borax should be kept on the washstand, and will be found of great service. If the water is hard it will soften it, and if the soap does not readily lather, a little borax will hasten the operation. The writer of this has frequently found, when it was necessary for her to keep awake, and she felt as if her skin was drawing together in her effort to keep her eyes open, that a little alcohol put on with a small sponge and left to dry gave new life to the face and made it possible for the eyes to stay wide open. Where there is an inclination to spots on the lips a wash of tepid milk and water applied many times during the day is efficacious. It should be dabbled on with the bit of linen which every wise woman keeps for such purposes. "Dabbling," by the way, is exactly what the word expresses, and is the right way to apply any cosmetic, intended to be healing. The average woman treats her face as she might the kitchen floor—she rubs it with a coarse towel, she's not at all particular about the kind of water she uses, and a hard scrubbing is her idea of making it clean. Now the trouble with the average woman is that she don't know how to wash her face. She's horribly insulted when she is told this, but it is true, nevertheless. How shall she do it? She wants a big bowl full nearly to the top with water that has had the chill taken off; then plunging both hands down in this she should bathe her face again and again until the water is dripping from all parts of it; then it must be gently dried in a soft towel. Hardening the skin, a process that some of the so-called health reformers suggest, is an insult to it; it would have been made like one's finger nails if it had been intended that it should have peen treated in such a rough way. The best washrag for the face is is the union of the hands, for they form a washrag with a mind and never hurt one. If the face is dusty and soap is to be applied, then the washrag should be a flannel one. Don't be afraid to use hot water on your face. Florence Nightingale said that when it came to a question of removing dust or dirt from the face, and anybody wanted to see which was efficacious, she washed one sick soldier's face with cold water and one with hot, and the difference between the two, the color of the water after use and the result on the skin, left no doubt in the minds of the lookers-on as to the desirability of that which was warm. If you ask your physician anything about freckles he will learnedly call them lentigo. Now, freckles are not altogether the result of the sun on the skin; the skin itself is in a supersensitive condition when these spots come out, so the first thing you want to do in an effort to get rid of them is to induce your physician to give you a good tonic and to take it regularly. If the freckles do not go away of themselves, then try that simplest of remedies, lemon juice, for them. Too much food and lack of exercise make the skin "doughy looking," the eyes dull, and, as a natural result, the temper very unreliable. Avoid shocks. When you are very warm do not bathe the face in cold or even cool water; instead choose that which is tepid, and the skin will not then be rendered sensitive by the rapid change from heat to cold. Distilled water is best for the skin, and the next best is rain-water. Hard water makes it coarse, and eventually causes deep wrinkles. In the country, where hard water is often the most plentiful, she who would preserve her beauty of color and softness of the skin should be careful to use nothing but rain-water. Borax in the water makes the skin lustrous, and possesses the recommendation of ancient favor, as it was in use by the women of Egypt, who extolled its value for this purpose. Too much cannot be said in favor of the bath. It not only keeps the skin in good order, but has a delightful effect on the mind. It rests, refreshes and improves the body, and in time of worry is almost as soothing as sleep itself. It may be said that we can drown trouble in it. Certainly the bath will rid us of care for a time, and that is a great deal in a world that morbid and dyspeptic people pronounce "full of woe."

LABOR AND HUMANITY.

THE "NIGHTINGALE'S" DESCRIPTION OF A MODEL ESTABLISHMENT.

The nearest approach to the Dressmaking Association that Walter Besant, in fancy, established in Stepney Green, one of the darkest spots in the east end of London, has been realized by Messrs. Ferris Bros. in their new factory, at Newark. There are 350 employes in the factory, 330 of whom are young women. There are bath-tubs in the factory, with an abundance of hot and cold water, linen towels and toilet soap. In the girls' bath-room there are rugs under foot, the finishing is done in oak, the trimmings are nickel-plated, the sanitary arrangements are perfect, and everything is as bright and clean as it is possible to make it. Each employe is allowed thirty minutes for a bath, and if one is as fastidious as to need three-quarters of an hour, no comments are made. Every day tea, with milk and sugar, is supplied by the firm free of charge; oatmeal is furnished three days in the week at the same rate, and every other day soup is served at three cents a bowl. The entire floor is carefully cemented; it is light, warm and clean, and there are tables and benches for those who lunch in the building. An hour is allowed at noon, and while all are expected to be on hand promptly at 1 o'clock, the girls living at a distance from the factory are permitted to leave before 12 o'clock. At one end of this spacious floor there is an improvised music-room with a piano and window garden, where the girls sing, dance and sun themselves every noon. Opposite is an enclosed sanctum, divided into a reading and reception room. Bright, soft rugs are scattered about. The reading table is as well stocked with current literature as a club man's literary table. While not intended for circulation, the papers and periodicals are reserved for the exclusive use of the girls. An open fireplace is one of the attractive features of the reception-room, and there is a mantle mirror, too—that means of grace so dear to the sex. No charges are imposed upon the operators. They do not have to buy thread, pay machine rent, or replace broken needles. If an attachment is displaced it is restored by the firm, and even the girls' scissors are kept sharpened at the expense of capital. Hot and cold water, mirrors, towels and soap are amongst the conveniences. Posted over the stationary wash-basin is this request: "Please help with your forethought to keep things clean and nice."

BEEF ADVANCING.

THE CAUSE BEING THE INCREASED COST OF CATTLE ON THE RANGE.

The advance in the prices of meats has become general throughout the country—the increase being from two to five cents per pound on nearly all cuts. When, nearly two years ago, some of the best-posted writers warned the public and cautioned the stock-raisers, they were laughed to scorn and their predictions were held up to ridicule as the croakings of alarmists or the utterances of monopolistic tools. Sound reasons for the predictions were brushed aside by mere assertions, and were met by some would-be authorities with the statement that the ratio of beef cattle to population was steadily increasing, notwithstanding the heavy drafts made for export and the numerous causes cited as tending towards a decrease. The unprecedented marketing of calves and cows and the great increase in the practice of spaying heifers were pointed out as certain to produce a shortage before the lapse of three years, even if there was no increase in the exports of beef products. The increase, however, has been very great, and, combined with the causes named above, has produced the exact result predicted by the few and scouted by the many. From every quarter of the country comes reports of high prices for beef, and there appears no prospect of an early decline. The recent large purchages of range cattle by the Western packers indicate a conviction on the part of those engaged in the dressed-beef industry that there will be no decrease in the prices now prevailing, but rather that they will probably advance still further. High prices for beef will lead to the substitution of cheaper food, and mutton is likely to become, in a measure, a substitute for beef, as it has in Great Britain. Those who are always ready to lay every grievance at the door of the dressed-meat magnates of the West, are silly enough to have stated that the advance was directly chargeable to them, when the fact remains that range cattle are considerably higher in price than they were a few months ago. Some of the journals which make it a point to distort facts in order to appear to be argumentative, deliberately falsify and change reliable figures in order to support their position. Such journals, and even prominent stockmen who know better, have stated that the Western dressed-beef companies control the prices of meats throughout the country, and have brought about the present advance without any reason but to put more money in their coffers. Such statements are too ridiculous to be worthy of serious contradiction, especially in view of the facts presented above, showing the best of reasons for higher prices. From Helena, Mont., comes the report of a large sale of three and

four-year-old beef cattle at $50 per head, which is the highest price paid for beef cattle for several years past. This is one case of many which show that there has been a marked advance on the ranges, which necessitates an advance all along the line. It is very unfortunate that it is so, but all the false charges which can possibly be made will not alter the facts or reduce the prices. The advance is due to natural and legitimate causes, and will be governed by the legitimate demands of trade. When the cattle market becomes easier, the price of beef will fall.—*National Provisioner.*

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

May.

MEAT.—Beef, lamb, mutton, ham, kidneys, liver, sausage, veal.

GAME AND POULTRY.—Brant, pigeon, chicken, duck, turkey, goose, snipe.

FISH.—Anchovy, bass, catfish, cod, eels, clams, flounder, halibut, herring, lobsters, mackerel, mussels, perch, porgie, rock-fish, salmon, shad, shrimp, turtle, trout, sturgeon, whiting, weak-fish.

VEGETABLES.—Artichokes, beans, carrots, garlic, lettuce, onions, parsley, parsnips, potatoes, shallots, spinach, turnips, watercress, radish, rhubarb, sea kale.

PRACTICAL RECIPES.

SPRING SOUP.—Wash and peel three young turnips and cut them into shreds; take four young carrots and cut them into shreds; cut off the white end of two leeks, cut them in inch pieces and then into shreds lengthwise. Put an ounce of butter in a frying-pan; when hot, add the shredded vegetables and brown them slightly; add a pint of hot water or soup stock; simmer half an hour, add a quart more of stock and two tablespoonfuls of boiled peas, or asparagus tops. Put some snippets of toast into a tureen, pour the soup on them and serve.

ITALIAN STEAK.—Take about one and a half pounds of steak from the round and fry it brown on both sides. put it in a stone baking-dish, slice two good sized onions, a bunch of parsley and a shallot and fry them in the butter left from the steak; when brown put them with the steak with a seasoning of cayenne pepper, a few cloves, one or two chopped pickles and a little salt. Over all pour two cupfuls stock, cover the dish with a tight lid and bake for an hour in the oven, then put in the dish a whole carrot and turnip that have been parboiled, set back in the oven, and when they are done cut them into dice and serve with the steak.

LOBSTER CHOPS.—Take the meat from two medium sized lobsters and chop it fine. Put into a saucepan two tablespoonfuls of butter and one of flour, let them cook for a few minutes then add a cupful of cream, and a well beaten egg, seasonings of cayenne, salt and pepper and a dash of onion juice; boil up for a minute, stirring carefully, add the lobster, take from the fire and spread the mixture out on a platter to cool; when quite cold either cut out with a knife or else form with the fingers into neat little pieces, the size of small chops, dip these in beaten egg and crumbs and fry in very hot lard, drain them, stick a claw in each and serve very hot.

CAULIFLOWER AND TOMATOES.—Take one or more small compact heads of cauliflower and boil them in salted water, when done drain thoroughly, put them in a hot dish, heads up, and pour over them a well-seasoned tomato sauce.

OATEN MEAL MUFFINS.—Make a rather stiff batter with a pint of sour milk, a teaspoonful of soda, salt, a little sugar and oat-meal flour. See that the soda is thoroughly dissolved in a little water before putting it into the milk, then beat it a few minutes, add the other ingredients, beat well and bake in a good oven in well greased pans or rings.

COCOANUT CANDY.—Slice some pieces of cocoanut very thin and line a buttered pan with them. Make a candy of four cupfuls of sugar, one of water and a teaspoonful of cream of tartar, cooked to a crisp; pour it over the cocoanut and set away to harden.

ALMOND PUFFS.—Blanch two ounces of sweet almonds and beat them fine in a mortar with orange-flower water. Beat the whites of three eggs to a stiff froth, add a little powdered sugar, then mix in the almonds and add enough sugar to make a thick paste. Pour by spoonfuls on buttered paper and bake in a cool oven.

ÆSTHETIC HYGIENE.

THE INFLUENCE OF BEAUTY AS A MEANS OF HEALTH.

Before one of the New York working girls' clubs Dr. Louise Fiske Bryson recently gave an address upon this subject, reversing in more ways than one the usual order of copybook aphorism. While acknowledging the impossibility of any protracted happiness without virtue, and the maintenance of beauty's fine edge without goodness, the doctor affirmed that systematic efforts to be beautiful will insure a fair degree of health, and that happiness is the best safeguard against vice. The difference in appearance between one woman and another, it was stated, is more than anything else an affair of style—that beauty of beauties so hard to define and so easy to recognize, which makes the girl of no-colored hair, features of indifferent turn, and lines none too perfect, infinitely more attractive than other maids of faultless curves and innumerable strong points not cemented by this magic quality. Style may be defined, for want of something better to express it, as an attractive manner of holding the body, a firm, graceful way of doing things and of moving about. It is the visible sign of inherent power and reserve force. It is the outcome of long, deep breaths and the use of many muscles. The prayer of the New York child, "Lord, make us very stylish," when viewed aright, is recognized as an aspiration based upon sound scientific principles, and worthy of universal commendation. Proper breathing is the first art to cultivate in the pursuit of beauty. The lungs have their own muscular power, and this should be exercised. The chest must be enlarged by full, deep breathing, and not by muscular action from without. Inflate the lungs upward and outward, as if the inflation were about to lift the body off the ground. Hold the shoulders on a line with the hips, and stand so that the lips, chin, chest and toes come upon one line, the feet being turned out at an angle of sixty degrees. It is wrong to make the bony structure do most of the work in keeping the body upright. The muscles should hold it in position. In walking, keep face and chest well over the advanced foot, and cultivate a free, firm, easy gait, without hard or jarring movements. It is impossible to stand or breathe aright if the feet are pinched. When correct posture and breathing are interfered with, the circulation is impeded, and deleterious substances in the blood tend to make the complexion bad. This is one of the many evils of tight shoes. To be well shod has a marked influence on style. The feet symbolize the body in their way as much as the hands. A clever shoemaker says that in a well-fitting shoe the human foot feels like a duck's foot in the mud. It is held firmly in place, but nowhere compressed. Nothing can exceed the vulgarity and hygienic wickedness of a shoe that is manifestly too tight. For misery-producing power, hygienically as well as spiritually speaking, perhaps, tight boots are without a rival. Next to the search for style pure and simple as a means of health, the care of the complexion and the cultivation of the right kind of expression are of great importance. The first is largely a matter of bathing and the general hygiene of the skin, while the second—a good expression—is best secured by the constant preference of higher thoughts over lower ones. This is the essence of intellectual living, and is fortunately within reach of us all. Beauty that is lasting, and really worth while, is more or less dependent upon a good circulation: while a good circulation is made possible by correct pose, proper breathing, and the judicious care of the skin, something else is also necessary to insure the normal quality and activity of the blood—and this something consists in a combination of sunshine and exercise in the open air. Town dwellers have too little of these blessings, partly from circumstances and partly from lack of wit. Exercise is the most important natural tonic of the body; without it there can be no large, compact, muscular frame It is as essential to physical development as air is to life, and an imperative necessity in the maintenance of beauty. To keep the complexion and spirits good, to preserve grace, strength, and ability of motion, there is no gymnasium so valuable as the daily round of housework, no exercises more beneficent in their results than sweeping, dusting, making beds, washing dishes, and the polishing of brass and silver. One year of such muscular effort within doors, together with regular exercise in the open air, will do more for a woman's complexion than all the lotions and pomades that ever were invented. Perhaps the reason why housework does so much more for women than games is the fact that exercise which is immediately productive cheers the spirit; it gives women the courage to go on with living, and makes things seem really worth while. In a general way the great secrets of beauty, and therefore of health, may be summed up as follows: Moderation in eating and drinking; short hours of labor and study; regularity in exercise, relaxation, and rest; cleanliness; equanimity of temper, and equality of temperature. To be as good looking as possible, and to be physically well, one must in general be happy; and to be happy, it is necessary to carry out ideas of personal taste and preference, as many of them as can be put in definite form without infringing upon the rights of others. Happiness has a distinct æsthetic and hygienic value. In itself it will secure perfect poise and respiration. To be happy is a duty just as style is a duty, and both are, in great measure, an affair of intellect and management. The old order put the cart before the horse; it said, "Be virtuous and you will be happy," a rule with many exceptions. But the old order changeth, and the modern gospel postulates happiness and material prosperity as the basis of morality. Other times, other manners. The ardent pursuit of good looks sums up the best there is in hygiene, and becomes a legitimate and praiseworthy means of health. The world has yet room for two or three truths, of which not the least is the fact that the definite desire for personal beauty—which was in the beginning, is now, and ever shall be—constitutes in itself a perfectly proper and meritorious inspiration to effort, especially in a country where the shades of Puritanism linger as a sad inheritance, and where disinterred Buddhism claims too often the frail neurasthenic for its own.—*Medical Record.*

CANCER CURE.—It is stated that a Vienna doctor has declared that cancer can be arrested, if not cured, by an injection of the dye methyl-violet.

STEAMER FUEL.—Three hundred to four hundred tons of coal per day is the amount used in some of the large passenger steamers on the Atlantic. This is about one ton per mile run.

INCREDIBLE.—It will be news to many to learn that when asafœtida is distilled *in vacuo*, one of the products is of exceedingly pleasant odor. So at least a German chemist announces.

AMERICAN ATHLETICS.

INJURIOUS CONSEQUENCES OF OVER-EXERCISE.

It is time to call a halt in the worship of athletics. We do nothing by halves in this country, and when the fashion is set and once becomes popular the actors follow it to the extremest limit. Our forefathers found sufficient exercise in their daily calling, and did not need the dumb bells, the cross bars, the trapeze, and all the wonders of the furnished gymnasium to give to their blood a healthy circulation. The farmer who held the plough, plied the hoe, swung the scythe, or handled the axe, did fully as much for his muscular development as nature in her most exacting moods could be supposed to require. The mechanic who used the saw, the plane, the adze, or the hammer, found his hands grow hard and his muscles tense without any playful attempt to accelerate the process by swinging from a rope or climbing a scaffold. The blacksmith at his forge, and the mason and bricklayer in their vocation, if they took on no superfluous flesh, found no reason to complain of lax or shrunken sinews. It is true that the shoemaker on his low bench and the tailor who bent over his work did not have the same variety of exercise in their respective callings, but out of the shop there was abundant opportunity to display the needed energy. The garden and the woodpile, the one or the other, were always waiting with the spade, the hoe or the axe, and when these failed through the passing season or inopportune weather, there was never wanting other service sufficient to quicken the stagnant blood, and take the kinks out of the unstrained cords. We are not decrying exercise, nor condemning physical training, we are only following the history of the present craze back to its origin. When the young man left his farm and gave the shop a wide berth for the more attractive clerkship, he still lacked none of the opportunities for useful bodily exertion. He made the fires, he swept the store or the warehouse, he shoveled the snow from the sidewalk, he helped to unload and to pile the goods, he carried bundles, and found enough to do to make the bed at night a welcome resort for a weary frame. As customs gradually changed, there was a large class of young men who had too little physical exertion, and really needed some form of exercise to give sturdiness to the body and to strengthen its otherwise inert muscles. Then came the gymnasium, with its adjuncts in the billiard-room and the nine-pin alley, and later the bath and the luxuries belonging thereto. It is just here that the mischief began. Exercise, to give a healthy flow to the blood, and to bring into action all the muscles of the body, is undoubtedly necessary to soundness of health; but over-training, for the sake of acquiring the agility or dexterity of the athlete employed in the circus, is dangerous always, and any performances of this character, when undertaken without the constant supervision of an experienced and conservative teacher, are certain to produce some permanent injury. It is a serious question whether the gymnasiums in this country, taken together, have not done quite as much harm as good. It is certain that greater caution and moderation in their use must be taught and enforced if they are to be the unmixed blessings their advocates represent them. Intelligent physicians have found the physical effects of these severe strains of the muscular system too injurious to pass unnoticed, and their voice of warning has come none too soon, for we know of many who will never recover from excessive indulgence in what they considered a harmless recreation. The athletics that have been brought more prominently before the community in the public games that have been thereby encouraged, are still more disastrous. Rowing in moderation, as a personal exercise, expands the chest, develops the muscles of the arms and legs, and tends to give sturdiness to the whole frame. If the practice stopped just there, there is nothing to be said against it; but when a college student joins a club, and enters into a course of training for a race, in the hope of becoming the champion of his class, or of winning in some annual contest with a similar club belonging to a rival institution, he is certain to injure himself, both in the early practice and the competing effort. We are not criticising his consequent neglect of his studies, and the substitution of physical prowess for intellectual culture, but we do insist that not one in a hundred can go through all that is required to prepare for a rowing match, and to take a final part in it, without some permanent injury to the organism of his body. The foot-ball games are still more to be deplored. The ordinary practice of foot-ball is of doubtful utility, but where it is resorted to as mere play, without any of the excitements of a serious contest, it may be indulged in occasionally without serious injury; but the collegiate contests are absolutely brutal, and ought to be suppressed. If the competition was confined to kicking the ball, the bruised ankles and battered shins, from which some never recover, would be bad enough, to say nothing of the over-strained muscles; but kicking the ball is not the means adopted to win the game; it is a fierce struggle, in which all the powers of the body are used in wrestling, pushing, lifting, wrenching, and contesting inch by inch the loss of ground on either side. Every opportunity of disabling the antagonist, except by the use of the fist in a downright blow, is permitted, or at any rate is practiced; and a crowd of fighters at a wake, where whiskey has been too plenty, or a contest between two Irish counties on the last day of an old-fashioned country fair, never presented a sorrier set of victims than come limping home with battered visages from these annual games. The base-ball practice is a little less hazardous, but this in a great measure has lost its amateur character, and has now degenerated into a money-making business for stock actors and their supporters. Our whole system of athletics in this country needs a careful pruning and revision.—*Journal of Commerce.*

ENERGY.

THE RELATIONSHIP OF FORCE AND MATTER.

Before the Thomson Scientific Club, at Lynn, Mass., Professor Thomson recently delivered a very interesting address on "Energy." Formerly, he said, matter was considered as the thing that existed, and force the something that acted upon it. Energy is a term used to express something which we do not always understand. It exists everywhere so far as we know. Matter was considered indestructible. If we admit that energy can act on energy, we have no need of the old matter and force. We can see the changes in energy, though we cannot discover the thing itself. We have potential and active energy. Potential is simply stored energy, power to do work. The water in the reservoir is the same as the water a hundred feet lower, but it can do the work that the other cannot, because it has energy stored in it. When that water is running down the hill and turning the wheel, it shows its actual energy. The earth revolving is another case of stored-up energy, as is also a wheel in motion. A spring is an example of elastic energy. In a boiler we have kinetic energy transformed from the heat of the fire. These are all mechanical forms of energy. The cannon ball shot into the air shows energy of motion in its ascent. When it reaches the highest point, it has energy of position. When it strikes the ground and bounds, it shows elastic energy. Besides this there is energy of temperature, which the hot cannon ball possesses. This is called molecular energy. If we could take all the heat out of anything, it would become liquid and then frozen. This has been done even to air. There is another or electric energy, another chemical and another radiant. Every form of energy is convertible into any other, sometimes at so great waste as to be impracticable for use. In converting mechanical energy into heat it is almost perfectly efficient, but in converting heat to mechanical motion ninety per cent. is lost. The energy of heat is disorganized as contrasted with the organized, direct energy of motion. A disorganized army, each soldier going his own way, can do little. The tendency in nature is to degrade energy.

DON'T GET SICK!

Nine times out of ten sickness is unnecessary. Of course there are many ailments against which we can not make ourselves invulnerable. Injuries by accident form one large class. Diseases incident to changes in life, such as the teething of infants, the ills of motherhood and the wasting-away and other maladies of old age are a second. Then there are the epidemic and germ diseases, such as cholera, glanders, small-pox, yellow fever, typhus, anthrax, consumption, leprosy and lupus, against which science is now beginning to make rapid progress. But of the other and commoner sicknesses, such as coughs, colds, headaches, "malaria," mumps, diarrhoea, colic, indigestion, congestion of the kidneys, heartburn, eruptions, boils, ulcers, these and a thousand others are the result of ignorance, carelessness and wilful disregard of the principles of common sense as well as the teachings of physiology. With but a slight knowledge on the subject and with reasonable care, it is possible to pass through life and hardly lose an hour from the causes mentioned. It must be remembered that the blood is as it has been poetically called the life-current. It bathes every cell and molecule of the body, it renews every part, it brings the countless atoms which constitute increase in weight, and it takes away those whose loss means decline, emaciation and death. As it means life and death, so when it is in normal condition it means health, strength and happiness and when impure or charged with humors it means disease, weakness and suffering. The first great principle is to keep the blood pure. This cannot be done in a moment. It takes time to purify the blood just as it does to overload it with humors and the worn out particles of the physical system. But the process of purification involves the corresponding disappearance of the various symptoms of sickness, and the final state, when reached, of normal purity is marked by the utter vanishing of every ailment. Every one knows how the system becomes clogged with humors. Over-eating and over-drinking, dust from the air, dirt from clothing, unwholesome food, inherited taints and unsanitary surroundings are the chief causes in nearly every case. These causes are simple and easily understood. Equally simple are the remedies for undoing the harm done. Sunshine and plenty of it is a necessary medicine. Go out into the fresh air as often as possible, take long walks, keep your windows open and your rooms full of daylight. We are like flowers and fruits and can never reach a beautiful maturity without sunlight. Warm bathing is more important. Take a lukewarm bath every day, not cold because it shocks both skin and nerves. Not too hot, because it weakens the pores and glands. Do not use too much detergent. A spoonful of ammonia, a few grains of borax, sodic carbonate or potash lye thrown into the bath-tub or a fine toilet soap will accomplish all that is needful. Above all, purify the blood from within by using Ayer's Sarsaparilla. It is not a secret drug, but the finest scientific combination known to science, of Honduras Sarsaparilla, yellow dock, other powerful tonics and diuretics. Anyone can make it, but to make it at home would cost a hundred times more than you can buy it for. The ingredients named, when properly combined, stimulate and strengthen the liver, kidneys and stomach, and in this wise expel or destroy every particle of humor, debris, decay, or impurity that may be floating in the blood or deposited in the system. No matter how deep-seated or long standing any ailment, Ayer's Sarsaparilla rapidly cleanses the entire system and so does away with the disease.

BUSINESS NOTES.

IMPERIAL GRANUM.

Among the foods prepared for infants and invalids none has taken a stronger hold upon the medical profession, and those who have used it, than Imperial Granum. Its method of preparation is peculiar, and in spite of all the fine-spun theories, it has proven itself practically a good and useful preparation, easily assimilated, containing a very large amount of nutriment and not requiring either skill or time in cooking nor labor of a delicate, weak stomach in digesting. The numerous certificates from the most eminent physicians published by the proprietors, sufficiently attest the well-deserved popularity of this valuable physicians' aid.



As your grocer for

The Cleveland Cook Book.

(free), containing over 350 proved receipts. If he does not have it, send stamp and address to the Cleveland Baking Powder Co., 81 Fulton Street, New York, and a copy will be mailed you.
Please mention this paper.

25 CTS. PISO'S CURE FOR CURES WHERE ALL ELSE FAILS. Best Cough Syrup. Tastes good. Use in time. Sold by druggists. CONSUMPTION 25 CTS.

Fine Table Wines

From our Celebrated Orleans Vineyard.

Arpad Haraszthy & Co.

Producers of the

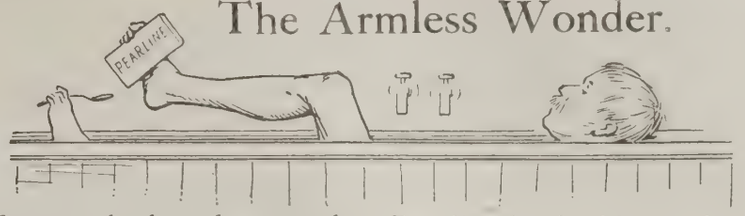
ECLIPSE

CHAMPAGNE,
530 Washington St.
SAN FRANCISCO.

GENERAL AGENCIES:

NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOSEPH R. PEEBLES' SONS CO., 73 West Fourth Street
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave
HONOLULU, H. I.: HAMILTON JOHNSTON.

The Armless Wonder.



He uses the harmless wonder, *Pearline*, for bathing. A teaspoonful on the sponge or wash rag is enough. You'll find the directions on every package. Try it. It's as clean and refreshing as a Turkish bath—almost nothing to pay—no danger, no more than with good soap—but there's no soap as good. It does more, it's more effective—in the bath as in everything else. And it washes everything—in hot or cold, hard or soft, salt or fresh water. It makes no difference if you use *Pearline*. In the laundry and for house cleaning *Pearline* makes a saving of dollars for every penny of its cost—every grocer sells it.

Beware Peddlers and some unscrupulous grocers will tell you, "this is as good as" or "the same as Pearline." IT'S FALSE—Pearline is never peddled, and if your grocer sends you something in place of Pearline, do the honest thing—*send it back*. 191 JAMES PYLE, New York.

THE RETORT SCIENTIFIC.

A CORRESPONDENT EMPHATICALLY DENIES THE ALLEGED WORTH OF ALUMINIUM.

In the *Tribune* of May 6th we find what purports to be a communication from a Springfield, Mass., correspondent, signing himself "C M.," over the date of April 6, which traverses in no ambiguous phrases the generally accepted value to the arts and sciences of aluminium. He says: "It is interesting to watch certain crazes which at certain times in history have taken hold of and still affect the minds of men. Thus the tulip craze, the South Sea craze, the balloon craze in the beginning of this century and end of the last. In the present age we may notice the aluminium craze. How people will invest thousands of dollars on hearsay evidence, when they could ascertain the truth by buying 25 cents' worth of pure aluminium wire or sheet, belongs to the oddities of capital gone carzy. The yarns about aluminium are so numerous, and are repeated in so many bold and frank lies that it seems almost a vain task to try to set people right. Now, Jules Verne, the champion writer of scientific fancy, never uses aluminium much in his fiction. He knows too well that it is 'no good.' In 'De la Terre a la Lune' he uses a large aluminium bullet, not because of its strength, but because it is so light. Not long ago a card from persons interested in the making of aluminium came to me, stating that aluminium is as hard as steel. All wrong! The purer, the softer. Pure aluminium is just a trifle harder than ordinary cheap zinc or spelter, which can be soldered, threaded and drilled without difficulty, while pure aluminium cannot be soldered reliably, and for working is one of the 'nastiest' metals in existence. One great point in its favor, but only a point of skin-deep beauty, is that the aluminium rust forming in the air is white, while it is brownish red on iron, green on copper, and gray on zinc—but aluminium tarnishes readily, especially in salt air. Salt water acts upon it far more than it does upon iron, and a ship built of aluminium would be full of holes after one trip around the globe. Therefore, for ship building and all parts exposed to the water it is even intrinsically inferior to iron—therefore not worth 6 cents a pound. For roofing it is vastly inferior to galvanized iron, because it cannot be soldered, and much inferior to zinc—therefore not worth 5 cents a pound. For vessels to be used in the kitchen, it could only be employed if salt was kept away, but with salt present, it would not have the slighest advantage over ordinary tin pails—therefore would not be worth 8 cents a pound. For parts of machinery where strength is required, weight for weight, it is not as strong as iron. As such iron can be bought for 14 cents a pound, aluminium would be worth less than that; for the same strength aluminium would be four times more bulky. For spoons and knife-handles, where no particular quality except looks is called for, it might be worth as much as tin, say 22 cents a pound. The drawback in that use would be its great softness, as it soils the fingers when handled, like lead. The only use for which at present pure aluminium may take, with advantage, the place of longer-known metals, is for electric appliances and wires. For the same diameter, aluminium is twice as good a conductor as iron; its weight is almost exactly one-third, but its strength is only one-fourth, so that the wire could only be stretched three-fourths the distance over which now iron wire is stretched to keep the same relation between weight, strength and sagging. For these purposes aluminium might be worth 12 cents a pound. It could be made harder by alloying it, especially with silicon, but even the hardest aluminium, short of aluminium bronze, which is essentially 90 per cent. copper, I met with was only about the strength of brass. The alloys of aluminium have all been made and tried thousands of times, but no value has been found in them which would make the aluminium worth more than copper—say, perhaps, 18 cents a pound. The aluminium bronze keeps fairly bright, but when made in its proper proportion is extremely hard to work. In this bronze aluminium shows at its best, but does not come up to good steel in ease of handling and working. One advantage is that the bronze is elastic and springy, even when almost red-hot. It consists essentially of 90 per cent. copper and 10 per cent. aluminium. How much the metal is worth for advertising medals, for plaques and other uses of a more sensational character is, of course, impossible to estimate. Its value ranks with that of the chromo. At present, its greatest use lies in the magnetic power which it has for greenbacks, and in proving the defective experience of capitalists. While, therefore, as will be seen from the frequent examples quoted, the true value of aluminium does not lie much above that of zinc, which costs 6 cents a pound, the cheapest aluminium in the market is held at $2.25, and the manufacturers are already compelled to send around circulars, in which you may read between the lines: 'Tell us some use of aluminium.' There is not a single application, at present, in which aluminium ranks intrinsically above the value of the same weight of copper, which is 16 cents a pound. Even chemically, it has not the energy of sodium, potassium, magnesium, and in an extensive practice as a chemist I haven't had a single use for aluminium in fifteen years."

INCH OF RAIN.—An "inch of rain" means a gallon of water spread over a surface of nearly two square feet, or a fall of about 200 tons to an acre of ground.

DISEASE BEARERS.—"It is no new doctrine," says the *Lancet*, "that in the presence of infectious or contagious disease every object may become endowed with a mischievous faculty of transmission. Nothing is exempt, though some substances are naturally better fitted to act as media than others. Such substances as clothing and carpets may be placed in the first rank, and paper, especially in the book form, hardly second. The scrupulous rigor with which measures of purification are adopted in regard to all these, is proof of the wholesome suspicion with which they are commonly invested. It was not to be expected that paper money could escape the stigma, nor should it. Even solid coin has latterly been credited with the same maleficent property. It cannot be denied, indeed, that any penny or shilling may thus be made to bear a novel and mischievous increment of its own."

IMPORTANT PRECAUTION.—In some cases, it becomes impossible to locate a furnace to supply warm air to all the flues built in the house. The difficulty could be overcome if all the details of location of furnace, length, size and shape of air pipes and flues, size and position of smoke flue, position and size of cold air duct, were carefully studied, and included in plans and specifications.

THE MODEL KITCHEN.—The importance of a good kitchen can hardly be exaggerated. It is the great laboratory of the household, and it ought to be remembered that not only the comfort, but the health of the family also is greatly dependent upon the manner in which food is prepared. A kitchen should be proportioned to the size of the house, reasonably large, with good height of ceiling, well lighted, and properly ventilated.

NEGATIVE AND POSITIVE.—A novel lawsuit recently came before the court of Petersburg, Virginia. A short statement of the facts is as follows: Davis, a photographer, some time ago sold to a florist a lot of refused negatives, which he wanted to use to cover his hothouse. Foster, a rival photographer, bought some four hundred of the negatives from the florist, and from these printed photographs and exposed them as specimens in his gallery. Davis obtained an injunction to prevent Foster from so using the negatives, and the court perpetuated the injunction.

MANUFACTURE OF OLD LACE.—A technical journal, in a chapter devoted to the tricks of various trades, tells how the ordinary quality of machine-made lace can be toned up to bear a close resemblance to the genuine article, and gives the method by which hundreds of yards are treated every year. The lace is rinsed in a strong decoction of Oolong tea which has been strained and allowed to become cold. The lace should not be crushed in a wringer, but pressed with the hands until partially dry, then spread on a clean ironing board. The delicate points are then carefully separated, so that the pattern may be preserved. When dry the lace exhibits a tea tint, which lends the material a tinge of yellowish antiquity.

IRON AND STEEL.—Add carbon to pure iron and it becomes steel. Add a hydrocarbon to iron, and steel itself becomes so extensively modified that its properties are not recognizable. Thus steel may be as soft as pure iron. Add hydrogen, in varying quantity, and it has the quality of resilience, as in the watch spring, or the quality of tenacity, as in the knife or razor, or may be given nearly the hardness of a diamond, as in a file. With steel at a low temperature, from 400 to 450 deg. F., edge tools are produced, the color in the yellow shades; from 500 to 525 deg. various sorts of springs are produced, color blue; while by heating iron to whiteness and plunging it into water, which is mainly composed of hydrogen, files are produced or forms even harder.

SWIFT'S

CHOICE

Chicago Dressed Beef

AND

MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,

UNION STOCK YARDS,

CHICAGO, ILLS.

HAMMOND'S

CELEBRATED

Calumet Oleomargarine

Strictly pure, cheap and healthful.

Ask your grocer for it.

Put up in packages of all sizes, also prints and rolls.

C. H. HAMMOND CO.,

607 to 615 THE ROOKERY,

CHICAGO.

Also offices at Boston, South Omaha, Neb., and Hammond, Ind.

TRADE MARK

SUPERIOR NUTRITION THE LIFE.

IMPERIAL GRANUM THE GREAT MEDICINAL FOOD

REGISTERD.



IMPERIAL GRANUM.—There is one dietetic preparation that goes on in the even tenor of its way, always a popular food with the doctor when no other one can be, or will be, retained on the stomach. It is carefully prepared, never disappointing, always a valuable aid to the busy doctor. Easily assimilated, with the greatest possible amount of nourishment, combined with the minutest amount of labor in its digestion, IMPERIAL GRANUM stands to-day, without a rival, in the room of the sick or convalescent. While good for children in all the varying periods of their existence, yet its strongest hold is in the sick room where either adult or little one needs a soothing, sustaining diet with the least amount of physical effort for its digestion.—*W. C. Wile, A.M., M.D., The New England Medical Monthly, Dec. '90.*

IMPERIAL GRANUM in my hands, seems to be all that is claimed for it, and experience has taught me to rely on its use where its special properties are indicated. In infantile diseases it has proved very efficacious, and I always direct its use when a child is being weaned.—*P. Varnum Mott, M.D., Boston, Mass.*

IMPERIAL GRANUM—"Of the preparations so varied and so highly commended by those who put them on the market, IMPERIAL GRANUM seems to hold the first place in the estimation of medical observers."—*N. Y. Medical Record, Vol. 13, No. 23.*

IMPERIAL GRANUM, the invaluable food for children and invalids, is in constant use in the hospital, and has shown its superior value many times. Thousands have been helped back to strength by the support rendered by this easily digested and palatable food.—*The Cottager, Mass. State Hospital Cottages for Children, Aug., '89.*

IMPERIAL GRANUM is a prepared food that has acquired a very high reputation for its nutritive and medicinal excellence, and we have found it adapted to very young children as well as adults—in fact, we have used it successfully with children from birth.—*The Post Graduate Journal, New York, April, '90.*

IMPERIAL GRANUM is acceptable to the palate and also to the most delicate stomach at all periods of life.—*Annual of the Universal Medical Sciences, '90.*

Many are good, but one of the best is IMPERIAL GRANUM. It has stood the test of many years, and has not been displaced by any yet introduced later; while many competing kinds of prepared foods have come and gone, and been missed by few or none. But this will have satisfactory results in nutrition far into the future, because it is based on merit and proven success in the past.

The Phaumaceutical Record, New York, March 19, '91.

IMPERIAL GRANUM is an invalid food of unrivalled purity, very palatable, and of especial value in typhoid fevers, inanition, and enteric troubles generally. Its sale is world wide.—*The Homœopathic Recorder, Philad'a, Pa., May, '90.*

SOLD BY DRUGGISTS. Shipping Depot, JOHN CARLE & SONS, New York.

HOSMER, CRAMPTON & HAMMOND,

NO. 43 COMMERCIAL STREET,

BOSTON.

COMMISSION MERCHANTS,

HAY, STRAW, FLOUR & GRAIN.

E. B. HOSMER, G. W. CRAMPTON, BENJAMIN HAMMOND, A. L. ROBINSON.

BOSTON HAY AND STRAW MARKET.

Hay, choice to fancy, in large bales	$14.00 to $15.00
Hay, choice to fancy, perpetual pressed bales	13.00 to 14.00
Hay, fair to good	12.00 to 13.00
Hay, poor to ordinary	10.00 to 12.00
Hay, Clover and Clover mixed	10.00 to 11.00
Hay, swale	8.00 to 8.50
Straw, Rye, good to prime	17.50 to 18.00
Straw, Oat	8.00 to

BOSTON, May 9, 1891.

Receipts for the week are 180 cars of Hay and 15 cars of Straw; corresponding week last year, 209 cars of Hay and 12 cars of Straw. The receipts are moderate and the stocks here are well cleaned up. The market is firmer in consequence. It is a good time to get in shipments. Rye straw is steady, with moderate receipts and moderate demand.



H. F. WILSON,

WIRE BALE TIES,

458 WEST 38th STREET, New York.

COPPER ON PORCLAIN.—Manufacturers of statuettes and other articles of porcelain have been experimenting for a long time in the direction of a process to cover porcelain articles with a deposit of copper. No successful industrial process has been discovered until recently, a Vienna chemist solved the vexed problem. The process is as yet a secret, but it is stated that one of the coating products is first used to fill the pores of the porcelain biscuit, thus preventing the crystallization which has heretofore characterized other processes. This treatment is followed by the processes of electric deposition now in vogue. The results are said to be very remarkable, the articles being difficult to distinguish from bronzes.

FIGURE THIS OUT.—Charles Jahnke was married at Memphis lately for the fifth time, and his bride is Mrs. Lizzie Perche, being her third time. The groom is 55 and the bride 30 years old, and both are well-to-do. Three of Mr. Jahnke's five spouses were widow's when he captured them, and all three of his bride's husbands were widowers. Jahnke has two children by different wives and one stepson contributed by one of the widows he married. His new wife brings him two more stepchildren by different husbands. The happy couple are somewhat bothered to know what relationship all these children will bear to one another and what would be the result to their children in case they should intermarry hereafter.

Don't kick



because your business is bad, but advertise If you don't know how to, write to us and we will tell you.

We will prepare your advertisement or give you advice and assistance to aid you in preparing it yourself. We will have the advertisement set in type and procure illustrations if any are needed. When a satisfactory advertisement has been produced we will furnish proofs and an electrotyped pattern to be used in duplicating the advertisement if the display or illustration make an electrotype desirable.

Address GEO. P. ROWELL & Co.,
Newspaper Advertising Bureau,
10 Spruce St., N. Y.

Tabasco Pepper Sauce

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced, by connoisseurs, to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY,

NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

HARTSHORN'S SELF-ACTING SHADE ROLLERS

NOTICE SCRIPT NAME OF Stewart Hartshorn ON LABEL, AND GET THE GENUINE HARTSHORN



A HIGH-GRADE PIANO

AT A VERY MODERATE PRICE.

NEW DESIGNS. FANCY WOODS.

Terms Easy. ✣ Monthly Instalments.

TWO, THREE AND FOUR PEDALS.

Catalogues, Prices, Terms, Etc., sent to any address.

EVERY PIANO WARRANTED 5 YEARS.

(Mention this Paper.)

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,

HOWARD STREET, BOSTON, MASS.

GOLD MEDAL, PARIS, 1878.



W. BAKER & Co.'s Breakfast Cocoa

from which the excess of oil has been removed,

Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

"BILLET"

are

Carefully Selected

French Sardines,

Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS.

BROMO SODA.

Useful in Nervous Headache, Sleeplessness, Excessive Study, Over Brainwork, Nervous Debility, Mania, Etc.

DOSE—A heaping teaspoonful in half a glass of water, to be repeated once after an interval of thirty minutes, if necessary. Each teaspoonful contains 30 grs. BROMIDE SODIUM and 1 gr. CAFFEIN,



SUPPLIED BY ALL DRUGGISTS

Ask for (Bromo-Soda, Warner & Co.) and take no other "Bromo."

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

THE ORIGINAL AND GENUINE
(WORCESTERSHIRE SAUCE).



LEA & PERRINS' SAUCE

In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—

Beware of Imitations; see that you get Lea & Perrins'

Lea & Perrins

For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS. NEW YORK.

RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

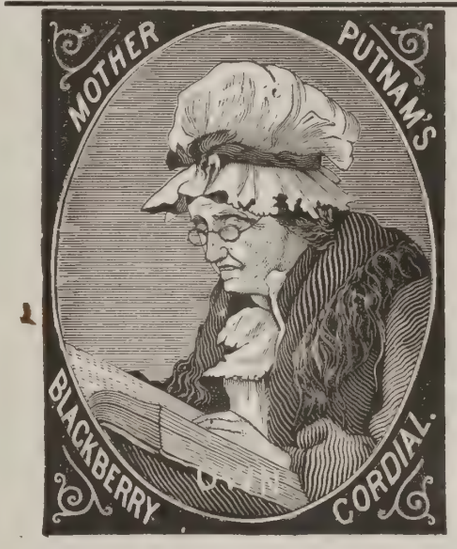
R. W. ROBINSON & SON,
184 Greenwich St., N. Y.

BLAIR'S PILLS.



Great English Remedy for GOUT, RHEUMATISM and KIDNEY COMPLAINTS.
SURE, PROMPT and EFFECTIVE.
Large Box, 34; Small, 14 Pills.
At all Druggists, and
224 WILLIAM STREET, NEW YORK.

Pure LAGER BEER,
"IMPERIAL" and "CULMBACHER"
Brewed & Bottled SPECIALLY FOR HOTELS, CLUBS AND PRIVATE FAMILIES
BY
Beadleston & Woerz
291 W. 10th St. New York.
Orders by Postal Card promptly attended to.



C-U-R-E-S
DIARRHŒA, DYSENTERY,
MALARIA,
all ailments of the bowels. Is an anti-dyspeptic, and a **DELICIOUS INVIGORATIVE.** Leading Physicians prescribe it for **ADULTS AND CHILDREN.** *FOR SALE* by Druggists and dealers.
RHEINSTROM BROS., DISTILLERS OF FINE LIQUEURS,
64, 66, 58, 60, 62 E. 3rd STREET, CINCINNATI, O.

ESTABLISHED IN LONDON, 1831.
DEAN'S PATENT
Ardenter Mustard



W. G. DEAN & SON.
361 & 363 WASHINGTON STREET; 84, 86, & 88 NORTH MOORE STREET, N.Y.

We can save you Fifty Dollars when you Build. See;



A complete set of Plans to build from, simply state about price of dwelling desired. 25 cts. in stamps. Our book "Beautiful Homes." 25 cts. Our monthly book "The National Builder," 25 cts. Address
The National Builder, Adams Exp. Bldg., Chicago, Ill.

DETECTIVE! WE WANT A MAN IN every **locality** to act as **Private Detective** under our instructions. Send stamp for particulars.
WASHINGTON DETECTIVE AGENCY,
Box 787. Washington, Iowa.

THE GREAT AMERICAN TEA COMPANY

LADIES

GET UP ORDERS.
Entire New Departure.
A HANDSOME PRESENT TO EVERY SUBSCRIBER.
THE GREATEST INDUCEMENTS EVER KNOWN TO INTRODUCE OUR NEW GOODS.

If you enjoy a cup of **Delicious Tea** send in your orders. 3½ lbs. Fine Tea by mail on receipt of $2 and this "ad". Beautiful premiums given away with $5 orders and upwards. The **most extraordinary bargains** ever offered, during the next thirty days. China Tea Sets and Lamps with $10, $15 and $20 orders to introduce our excellent **New Crop Teas.** Formosa and Amoy, Oolong, Congou, English Breakfast, Japan, Imperial, Young Hyson, Gunpowder, Sun Sun Chop and Mixed. Good mixed teas 20c. per lb. Headquarters in United States for Fine Teas. One pound of our tea will go farther than three pounds of trash. Thirty years' national reputation for selling **Pure Goods Only.**

THE GREAT AMERICAN TEA COMPANY,
P. O. BOX 289. 31 and 33 Vesey Street, New York.

We shall be glad to supply our readers with any periodical published at club rates.

Send us a postal naming periodical and we will quote you prices.

ANALYST PUBLISHING CO.,
19 Park Place, New York.

INSTRUCTIONS TO SUBSCRIBERS.

The **Names of all Subscribers** are registered as soon as received, and paper is always promptly forwarded.

Postage.—The postage to all parts of the United States and Canada is paid by the publisher.

Remittances of small sums may be made with comparative safety in ordinary letters. Sums of one dollar or more must be sent by registered letter or P. O. money order, otherwise we cannot be responsible for same. Silver must not be sent in a letter.

Postage Stamps will be received for the fractional part of a dollar, and in any amount when it is impossible for patrons to procure bills, but you must send one or two-cent stamps only.

SUBSCRIPTIONS.—The AMERICAN ANALYST will be sent one year to any subscriber for ONE DOLLAR. New subscriptions can begin at any time.

We Stop the Paper at the expiration of the time paid for unless a renewal of subscription is received. Those whose subscriptions have expired must not expect to continue to receive the paper unless they send the money to pay for it.

Change of Address.—Subscribers wishing their addresses changed must invariably give their former as well as new address.

Missing Numbers.—It occasionally happens that numbers of our paper sent to subscribers are lost or stolen in the mails. In case you do not receive any number when due, write us a postal card and we will cheerfully forward a duplicate of the missing number.

Most Important of All.—In every letter that you write us, never fail to give your full address, plainly written—name, post-office, County and State.

Address all letters to

THE ANALYST PUBLISHING CO.,
19 Park Place, New York.

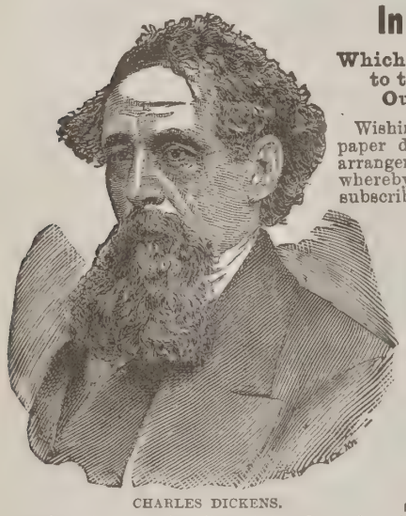
GRAND PREMIUM OFFER!

A SET OF THE

WORKS OF CHARLES DICKENS,

In Twelve Large Volumes,

Which we Offer with a Year's Subscription to this Paper for a Trifle More than Our Regular Subscription Price.



CHARLES DICKENS.

Wishing to largely increase the circulation of this paper during the next six months, we have made arrangements with a New York publishing house whereby we are enabled to offer as a premium to our subscribers a **Set of the Works of Charles Dickens, in Twelve Large and Handsome Volumes,** with a year's subscription to this paper, for a trifle more than our regular subscription price. Our great offer to subscribers eclipses any ever heretofore made. Charles Dickens was the greatest novelist who ever lived. No author before or since his time has won the fame that he achieved, and his works are even more popular to-day than during his lifetime. They abound in wit, humor, pathos, masterly delineation of character, vivid descriptions of places and incidents, thrilling and skillfully wrought plots. Each book is intensely interesting. No home should be without a set of these great and remarkable works. Not to have read them is to be far behind the age in which we live. The set of Dickens' works which we offer as a premium to our subscribers is handsomely printed from entirely new plates, with new type. The twelve volumes contain the following world-famous works, each one of which is published *complete, unchanged, and absolutely unabridged:*

DAVID COPPERFIELD,
MARTIN CHUZZLEWIT,
NICHOLAS NICKELBY,
DOMBEY AND SON,
BLEAK HOUSE,
LITTLE DORRIT,
OUR MUTUAL FRIEND,
PICKWICK PAPERS,
BARNABY RUDGE AND CHRISTMAS STORIES,
OLIVER TWIST AND GREAT EXPECTATIONS,
THE OLD CURIOSITY SHOP AND THE UNCOMMERCIAL TRAVELER,
A TALE OF TWO CITIES, HARD TIMES AND THE MYSTERY OF EDWIN DROOD.

The above are without question the most famous novels that were ever written. For a quarter of a century they have been celebrated in every nook and corner of the civilized world. Yet there are thousands of homes in America not yet supplied with a set of Dickens, the usual high cost of the books preventing people in moderate circumstances from enjoying this luxury. But now, owing to the use of modern improved printing, folding and stitching machinery, the extremely low price of white paper, and the great competition in the book trade, we are enabled to offer to our subscribers and readers a set of Dickens' works at a price which all can afford to pay. Every home in the land may now be supplied with a set of the great author's works.

GLENN'S SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,

C. N. CRITTENTON,
115 FULTON STREET,
NEW YORK.

Be progressive and keep abreast of the times. Avoid dyspepsia by using **Lard Compound** and **Cottolene,** a substitute for lard.

The highest medical authorities pronounce them healthful; and expert cooks commend them.

Our **Clairette** brand of cotton oil soap is the purest and best laundry soap in the market; as pleasant to the hands as genuine castile.

N. K. FAIRBANK & CO.,
CHICAGO AND ST. LOUIS.

OUR GREAT OFFER

TO SUBSCRIBERS

TO THE

AMERICAN ANALYST.

We will send the **ENTIRE SET OF DICKENS WORKS,** *in* **TWELVE VOLUMES,** *as here described, all postage prepaid by ourselves, also* **THE AMERICAN ANALYST** *for* **ONE YEAR,** *upon receipt of* **$1.50,** *which is only* **50** *cents more than the regular subscription price of this paper.* Our readers, therefore, practically get a set of Dickens' works in twelve volumes for only **50** cents. This is the grandest premium ever offered. Up to this time a set of Dickens' works has usually been $10.00 or more. Tell all your friends that they can get a set of Dickens' works in twelve volumes, with a year's subscription to **THE AMERICAN ANALYST** for only **$1.50.** Subscribe now and get this great premium. If your subscription has not yet expired, it will make no difference, for it will be extended one year from date of expiration. We will also give a set of Dickens', as above, free and post-paid, to any one sending us a club of three yearly subscribers.

ADDRESS:

THE ANALYST PUBLISHING CO.
No. 19 PARK PLACE,
NEW YORK.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 21. NEW YORK, THURSDAY, MAY 21, 1891. WHOLE No. 221

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - - $1 per year.
Single Copies, - - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.

Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.

Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,

H. LASSING, M. D., } *Editors.*
T. P. McELRATH, }

No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

Ancient Faith Cure 244
Domestic Dietetics 246
Editorials 241
Navigating the Air; Oleomargarine; Poison-Painted Peas; The Centre of Population.
German Electricians 245
Grape Juice 243
Household Servants 247
Nickel and Slot 246
Planked Shad 246
The Stage World 244
Utilizing Waste 242
Women's Work 242

NAVIGATING THE AIR.

At the annual meeting of the National Academy of Sciences held in Washington, D. C., in April, among the interesting papers that were read, one by Professor S. P. Langley, of the Smithsonian Institution, on "Flying Machines," attracted the greatest attention. Professor Langley gave the result of a series of experiments he began about five years ago to ascertain the possibilities of aerial navigation. He said that he set up on the grounds of the Allegheny Observatory a whirling machine with a diameter of sixty feet, and driven by a steam-engine of ten or twelve horse-power. He first sought to ascertain whether or not it required more power to move laterally than to stand still in the air. For this purpose he had suspended a flat brass plate from the arm of the whirling machine by a spring. When the machine was put in motion and the plate encountered an artificial wind going forty miles an hour, the spring instead of elongating actually shortened, showing that the weight or power required to suspend the plate was less when in motion than when it was standing still. His next series of experiments, Professor Langley said, demonstrated that it took a second or two more for a brass plane to fall four feet while in motion than when it was dropped from the hand without motion, the plane when in motion laterally sinking slowly as if the air had become dense like cream. From his experiments he reached the conclusion that the amount of power required for artificial flight was perfectly attainable by steam-engines we now possess. To him the amazing thing demonstrated by the experiments was that the faster you go the less it costs in power, and that a one-horse power will transmit a much heavier weight at a rapid speed than at a slow one. In summing up Professor Langley said that he did not say that man could traverse the air, but under certain conditions and with our existing means, so far as the power is concerned, the thing was possible. The difficulties would be in getting started, in coming down to the ground again, and in guiding one's self through the air. Nature had supplied an instructive intelligence in a bird to balance and guide itself. He did not question that man would ultimately acquire it. He thought all aerial navigation would pass out of the sphere of charlatanism and into the hands of engineers in a short time, possibly months instead of years. He believed we would see something notable come from it.

OLEOMARGARINE.

We have had repeated occasion to denounce the oleomargarine law as a monstrous sample of class legislation, and we are not alone in our opposition. The operation of the law has been somewhat different from what its projectors expected, as the *Sun* shows in a recent editorial discussion of the subject. It says the oleomargarine act was passed in 1886 ostensibly for the protection of consumers of butter, in reality for the supposed benefit of the dairy interests. In signing it, under the influence of Bill Scott and the fear of the agricultural vote, Grover Cleveland committed the United States to the policy of using the power of internal taxation for the purpose of crippling or crushing one industry for the good of another. The precedent was dangerous, and sure to produce similar efforts to make the United States a factor in the rivalries of business. The Conger lard bill, which fortunately failed to pass the Fifty-first Congress, was the child of the oleomargarine law, and legislation of the same kind is sure to be proposed in future Congresses. Persons who believe that such exercise of the taxing power is legitimate, are invited to ponder the fact that in the case of the olemargarine act that exercise has not fulfilled the purpose intended. The production of oleomargarine has not decreased since the passage of the act, but has greatly increased. Here are the returns of the Internal Revenue Bureau from the sale of oleomargarine stamps since the law went into operation: 1886–7, $407,670; 1887–8, $642,710; 1888–9, $686,674; 1889–90, $624,490; 1890–91 (July 1, '90 to May 1, '91), $694,944. If the sales for May and June are up to April figures, the amount for the year will be nearly a million dollars. The attempt to suppress or repress oleomargarine has failed to repress or suppress. There is a great demand for oleomargarine, and the demand has stimulated production. The Federal tax has had no effect save to increase the cost of production. Cheap butter is the only thing that can repress oleomargarine.

POISON-PAINTED PEAS.

We are informed that the State Board of Health of Massachusetts has decided to forbid the sale of vividly colored French canned vegetables, because they have found by analysis of many samples that twenty-seven out of thirty-seven contained cupric sulphate of copper or blue vitriol, one of the worst of metallic poisons in its crude form. In order to give due warning to the dealers in fancy groceries the Board will at once send out circulars to the effect that the sale of articles of food containing salts of copper is a violation of the statutes, and warning dealers that a repetition of sales will render them liable to prosecution. The sale of food products containing copper salts is forbidden in England, Scotland, Belgium, Germany and other countries. It is a curious fact that it was also forbidden at one time in France, though the country allowed the manufacture for sale abroad. But the pressure from the manufacturers was so great that the law was repealed and the sale allowed at home. Prosecutions have been successful in England, Belgium and Scotland, probably also in other countries. There is a minor consideration which will have its weight, though the action of the Board was purely taken on the grounds of health. This is that the prohibition of French colored peas will help home industries. An article not so nutritious, possibly stale, and put up in Europe, is made to appear more attractive than the fresh American vegetable. Their bright color makes French peas displace even fresh green peas in July; for their color is the only superiority, and causes selection by the eye instead of by the palate.

THE CENTRE OF POPULATION.

An interesting gathering, reported to have been ten thousand in number, assembled on May 10 at a point in Indiana, twenty miles east of Columbus, in Decatur County, to witness the unveiling of a monument erected to mark the centre of population in the United States. The monument is fifteen feet high, of highly polished gray limestone, and deeply cut into it is the following inscription: "Centre of the Population of the United States." This is the second time in the history of the United States that the centre of population has been ceremoniously marked with a monument. The first

time was in 1810, and the place was several miles northwest of Washington, D. C., where yet remains a small stone on which is engraved "Centre of Population." The centre of the population has travelled westward each decade about forty-five miles, and has varied from a straight line west from Baltimore as the population increased in the North and South. The only time when the exact centre could not be accurately fixed was from 1860 to 1870, when a perfect census could not be taken in that part of the United States where the civil war occurred. The following is the location of these centres each decade since 1790, when it was twenty-three miles east of Baltimore: In 1800, 18 miles west of Baltimore; in 1810, 45 miles northwest by west of Washington; in 1820, 16 miles north of Woodstock, Va; in 1830, 19 miles west by southwest of Moorefield, W. Va.; in 1840, 16 miles south of Clarksburg, W. Va.; in 1850, 23 miles southeast of Petersburg, W. Va.; in 1860, 20 miles south of Chillicothe, O.; in 1870, 48 miles east by north of Cincinnati, O.; in 1880, 8 miles west by south of Cincinnati, O.; 1890, 20 miles east of Columbus, Ind.

WOMEN'S WORK.

THE MANIFOLD OCCUPATIONS OPEN TO WOMEN IN FRANCE.

There has been published in Paris recently a book of remarkable interest to women, and, in fact, to students of social science, irrespective of sex. It is entitled "The New Practical Guide for Young Women in the Choice of a Profession," and in its pages may be learned more than a hundred methods by which French women may earn an honest livelihood in the city of Paris, as well as in the provinces. These occupations are classed under these heads: 1. Liberal professions. 2. Teaching. 3. Employment in public administration. 4. Private employments. 5. Trade, strictly so-called. These are again subdivided into needlework, work connected with the household, printing work, professional trades, industrial trades and artistic trades. A few occupations, such as the cultivation of silkworms and the manufacture of steel pens, belong exclusively to the provinces. All the information given is in a clear, practical, and exhaustive form, and, after perusing the book, one cannot help feeling a thrill of admiration at the enormous amount of skilled labor it shows to exist in Paris and the industry and intelligence that it must require. So many women, too, are employed in trades wholly feminine in their nature, but which require, of course, a luxurious public for their maintenance, such as the manufacture of stuffs for furniture, as well as the *articles de fantaisie*, which need continual invention to keep up with the fashions. The liberal professions consist of artists, doctors of medicine, health officers, druggists, dentists, midwives, professional nurses, lady inspectors of charitable institutions, hospital assistants, herborists, stenographers, and inspectors of work in manufactories. For musical artists there is the conservatoire, which is the best preparatory institution of the kind that exists. The list of studies is: 1. solfeggio, oral harmony, study of the piano and that of easy dramatic rôles; 2, singing; 3, lyrical declamation; 4, piano and harp; 5, stringed instruments to be played with a bow; 6, wind instruments; 7, counterpoint, organ and composition; 8, dramatic declamation. The instruction is entirely gratuitous. For admission to the classes the candidate must be no less than 9 years old and no more than 22, and must register her name and deposit a copy of her certificate of birth and of vaccination. There is only one entrance competition each year, and the number of places in each class is limited, except in the case of choral solfeggio. The duration of study, when there has been some previous instruction, is from two to three years. A sum of 600 francs a year is offered for competition, to enable the successful scholar to continue her studies. Every pupil who misses two classes in a month is crossed out of the books; and no pupil can appear in public without permission from the director. They are further obliged to promise not to take any engagements until their course of studies is finished, and to give aid if required at any one of the assisted theatres. Ten pensions of 600 francs and twelve of 1,200 francs are given annually, as adjudged by the examining committee, to the pupils in the classes of singing and declamation. These pensions can be withdrawn by the same authorities, if for special reasons they think it desirable to do so. The candidate who gains the first prize can remain in the class for another year. For the second and third prizes silver medals are awarded. Two trials are necessary for admission to the class of declamation: 1. A scene chosen by the aspirant, and if she succeeds well in this she is allowed to pass to the second trial, and recite a scene chosen by the jury from a list prepared by the candidate. The conservatoire is open to foreigners, which, with a few exceptions, is not the case with the other trades and professions. Painting is taught in professional schools and in private studios, there being no Government institution for the teaching of painting open to women. The "Association des Femmes Peintres et Sculpteurs," founded by Mme. Berteux, offers to its members the best chance of success in that profession. Since 1868 women have been authorized to study medicine under precisely the same conditions as the men. They are also permitted to be health officers, and here, too, the conditions are the same as for the male candidates. The school of pharmacy requires for the diploma of chemists either a Bachelor's degree or a teacher's certificate. The course lasts six years, of which three are passed in practical work in pharmacy. For dentists there is a school of odontology, founded in 1884, and there, too, women are received under the same conditions as the men. Midwives must be furnished with the diploma of first or second class. At the Clinique d'Accouchement women from 18 to 40 may attend the weekly practical lectures. After ten months course of study an examination for the second class diploma is held. The pupils leaving the Maternity usually possess a first-class diploma. All licensed midwives must possess a first-class diploma. From among these are chosen the nurses who reside in the hospital. These receive in payment 800 francs the first year, 1,000 the second, and 1,200 the third year. Seventy-five wet nurses are attached to the children's department of the Clinique d'Accouchement, and there are also certified wet-nurses attached to the other hospitals. They are paid 300 francs a year. For the post of lady delegate no conditions are exacted. These ladies receive from 1,800 ($360) to 2,000 ($400) francs a year. The sick-nurses can rise to be under inspectors and even head inspectors of their wards. These sick-nurses must also be furnished with diplomas, but that given by the municipal schools is held sufficient. They receive from 230 ($46) to 500 ($100) francs a year, with lodgings, and 1,500 ($300) to 2,300 ($440) without. There is no regularly established school of nursing in France. Herborists may learn their profession in the botanical classes in the school of pharmacy. There is no Government school of stenography, and must be learned under private teachers. France is probably the only European country enlightened enough to allow the post of stenographers to the Chamber of Deputies to be open to women. For their services in the Chamber they are paid 3,500 to 6,000 francs a year. Stenographers who report lectures, congresses or conferences are paid sixty francs an hour, each hour implying eight hours of transcribing. So far the method of Provost Delaunay is the one most used. Women are also chosen in France as inspectors of work of women and children in factories. Here there is a limit of age; they must be over 30 and not more than 45. They must pass an oral and written examination in the text of the laws written upon the subject, and they must prove that they have lived at least five years in the department where they are to serve. They have 150 establishments to visit in a month, and concerning these they must report to the prefect. They are all sworn in. To these posts there are no attached, and the salary is about 1,800 francs ($360) a year. As might be anticipated, the teaching profession is much overstocked. For private teaching no diploma is required, but practically it is needed, for a teacher with a diploma is always preferred. Ladies are sometimes attached to large scholastic establishments solely for the purpose of receiving the relations of the pupils. For their services they are paid fifty francs a month and their board. Secretaries and readers are paid from 100 ($20) to 300 ($60) francs a month. Their hours are long and their duties fatiguing. Interpreters get two francs an hour. For the post of interpreter the candidate must get herself into good relations with the hotels, for it is here that their services are chiefly required. In a lower class of life respectable women can earn ten or fifteen francs a month by taking children out for a walk every day, and thus relieving hard-worked mothers and saving them the expense of a nurse. These women are not, properly speaking, teachers, but they often talk some foreign language, and are often required to do so, in order that their little charges may gain practice. The public schools are divided into primary, secondary and superior. In the primary the best posts to be obtained are those of inspectors. There are five inspectors of boarding schools and five of infant schools. The salary is a minimum of 4,000 francs ($800) a year and a maximum of 5,500 francs ($1,100), with a bi-annual rise of 500 francs ($100). The inspectors also receive 500 francs ($100) a year for extra expenses. In Paris itself there are six inspectors of girls' primary schools and three of infant schools. The salary it 6,000 francs ($1,200) a year including expenses. There is also an inspector of the class for book-keeping and modern languages, in which the salary, together with the expenses, amounts to 7,200 francs ($1,440), and one post of inspector of schools for dress-making and cutting out. These schools are in the suburbs of Paris and the salary is 3,000 ($600) a year. The applicants must be 30 years of age at least and 35 at most, and must hold the highest diploma. They can all receive pensions, calculated after the rules applied to the employés of the Prefecture of the Seine, that is, after thirty years' service they have a right to a pension equal to half their salary. This sum is deducted from their salaries at the rate of 20 per cent. The teachers in primary schools must also hold the highest diplomas, except in the infant schools, which require a simple diploma and certificate of aptitude. Here the salaries of the teachers are from 1,5000 ($300) to 2,500 francs ($500), for the directresses from 2,750 ($550) to 3,800 francs ($760). Promotion can only be obtained after three years of service, and becomes a right after five. Good posts are those of adult school teachers, there being seventeen schools for adult women in Paris. There are sixty drawing schools throughout Paris and the provinces, but the salary of the teachers here is not fixed by the Government. These schools are excellent, and very good places in which to begin the study of art.

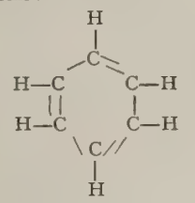
(*To be continued.*)

UTILIZING WASTE.

THE OBLIGATIONS OF SCIENCE TO ILLUMINATING GAS.

The first instance of practical gas-lighting on record occurred in the year 1792, when one William Murdock lighted his workshops at Redruth, in England, with gas obtained from coal, but it was not till twenty years later that the streets of London were lighted by gas, and it is only within the last half century that this cheap and convenient means of lighting streets and buildings has come into general use. The most important product of the destructive distillation of coal is, of course, the illuminating gas, the manufacture of which has already been described in these columns (July, 1888); but there are many by-products which are almost equally valuable. The residuum left in the retorts, known as coke, is a most excellent fuel, and in regions where soft coal is abundant it is a regular article of manufacture, part of the resulting gas being used to heat the retorts,

while the remainder is burnt or allowed to escape into the air. The ammoniacal liquor condensed from the hot gases as they come from the retorts contains no less than five different salts of ammonia, and is the chief source of supply of this invaluable alkali. In all, there are at least seventy different chemical compounds produced from the coal in the process of distillation, of which perhaps ten are useful as illuminating substances, while the remainder are either thrown away as impurities or saved for use in other ways. The most important of all the by-projects is the coal tar, which was formerly thrown away, but is now almost entirely utilized. This coal tar is a black viscous fluid, composed of about forty different hydrocarbon compounds. The discovery in 1850 of the aniline colors first called attention to its value, and since then an immense number of chemical and medicinal substances, artificial flavors and perfumes, insectides, disinfectants, explosives, photographic developers, as well as four hundred or more different colors, have been obtained from an ill-smelling repulsive liquid, which at first sight would appear to be the most useless thing on earth. Prominent among the substances contained in coal tar is a liquid known as *benzol*, sometimes less properly written benzene, as it is entirely different from the familiar cleaning agent known by that name. Benzol has the chemical formula, C_6H_6, and is important as being the starting-point or foundation-stone, as it were, for a long list of compounds known as the aromatic series of hydrocarbons. To account for the chemical phenomena presented by the substance, it is supposed that the atoms forming the molecule of benzol are arranged in the form of a hexagonal ring, as roughly represented in the following diagram. The lines connecting the letters represent the quantivalence or chemical affinities of the carbon and hydrogen atoms:



To thoroughly explain the theory of the benzol ring, as it is called, would lead us too far into the mysterious realm of organic chemistry, and the above diagram is only given to roughly indicate the supposed structure of a single molecule of benzol. In all the innumerable derivatives from this substance the inner ring of carbon atoms remains intact, but, by replacing the hydrogen atoms by other elements or radicals, both simple and compound, or by adding to the number of elements or radicals held to the ring by the carbon affinities an immense number of substances may be obtained, some of which may be directly obtained from the tar, while others are produced in the laboratory from the benzol itself—and as the only important source of benzol is from this by-product of the gas-works, a perusal of the list given below will show how much we owe to this industry aside from the illuminating product for which it was first undertaken. In addition to the four hundred or more brilliant aniline, alizarine, and naphthaline colors, we also derive from benzol carbolic, benzoic and salicylic acids, antifebrin, antipyrin, saccharin and thymol, all important medicinal agents; artificial oil of almonds and oil of wintergreen, the powerfully explosive picrates, the invaluable photographic developers, hydrochinone and eikonogen, besides a host of other substances interesting to the chemist only from a theoretical point of view. Quinine and morphine also belong to this series, but have not yet been artificially produced, while indigo, also a derivative of benzol, has already been prepared in the laboratory, although at a cost far exceeding that of the natural product. Finally, the pasty mass left after the distillation of the coal tar, and known as asphalt, forms a most excellent material for pavements and sidewalks. Curiously enough, the petroleum oils of America do not contain any of the aromatic series of hydrocarbons; their constituents belong to another series known as the paraffines, which do not contain the benzol ring. It is said that the East India petroleums do contain the aromatic hydrocarbons, but the supply is very small and uncertain, and until some chemist succeeds in artificially chaining the atoms of carbon together into the wonderful benzol ring, we must depend upon the by-product of the gas-works for many of our most important and valuable medicines and chemicals.

GRAPE JUICE.

THE DECEPTIVE USE OF THE PHRASE EXPOSED.

The name grape juice, like charity, covers a multitude of sins. More trash than anything else is sold under this taking title. Common sense will show at once that grape juice cannot be made to keep without adding a preservative such as alcohol, or an antiseptic like salicylic acid. Any liquid containing sugar will ferment and go through the various transformations of sugar, alcohol, vinegar, etc., and if artificially prevented, ceases to be grape juice. Lately a great deal of so-called natural grape juice has been advertised, and as it is supposed to be a healthful drink especially adapted for invalids, we have applied to an experienced wine maker from whom we obtain the information which follows, which tallies exactly with what we knew about the subject theoretically:

1. If great intelligent care be taken, grape juice can be sterilized by heating in bottle, sealing hermetically, and keeping in a temperature below 50 deg. Fahr. constantly. If moved to a higher temperature, I am afraid there would begin what is termed "insensible fermentation."

2. Alcohol will keep grape juice from fermenting, spoiling or changing, if added to the amount of 20 to 24 per cent. absolute. Sometimes 18 per cent. is sufficient, but less than 20 per cent. is risky.

3. Grape juice can be fermented to a point where sufficient alcohol is obtained to preserve the resulting liquid (wine); but it is then no longer grape juice, in the general acceptance of the term. If fermented to a certain degree, still leaving some natural sugar of the original juice, the resulting liquid will surely spoil unless alcohol enough be added to raise its alcoholic strength to at least 18 per cent. absolute. In lieu of alcohol, antiseptics, which are always dangerous to health and objectionable, may be added to secure the same result.

4. Port, sherry, angelica, sweet muscat, etc., in California, are made with the addition of more or less grape spirit, entirely without use of antiseptics, such as salicylic acid, naphthol, benzol, or other similar preparations. With port wine the grapes, according to locality where grown, are allowed to get the highest attainable sweetness, from 28 deg. Balling's scale up to 37 or more. The juice is then fermented to reach the highest possible alcoholic strength, which is seldom under 15 per cent. absolute, and in some localities reaches 17 per cent. absolute, without any additions whatever. This fermentation materially reduces the saccharine matter left undecomposed. If there is not from 4 to 6 per cent. saccharine left, that amount is added in the shape of concentrated grape juice. This concentrated grape juice is obtained by boiling down a given quantity of the juice pressed fresh from the grapes, so as to show from 70 to 75 deg. Balling's scale or saccharometer. After addition of this concentrated must or grape juice, the port is fortified to the difference between its actual alcoholic strength and at least 18 per cent. If the port showed 16 per cent., then 2 per cent. grape spirit would be added to make 18 per cent., or 4 per cent. to make 20, etc. The sherry is made very much in the same manner as the port, only differing in after-treatment. The sweet muscat and angelica are not fermented to so great a length as the port, so as to retain more saccharine and less alcohol. This necessitates also a larger after addition of grape spirit to have it attain the necessary minimum strength, viz., 18 per cent. By feeding a certain kind of grape juice with cane sugar, and treating with fresh grape yeast, two years ago, I made one thousand gallons of wine, the alcoholic strength of which reached a fraction over 19 per cent. absolute by fermentation alone. Experiments made by chemists for the British Government in Australia are claimed to have obtained a fraction over 21 per cent. through fermentation.

AIR AND FIRE.—A certain amount of air admitted to the furnace above the live coal is advantageous rather than otherwise if the supply be regulated. The oxygen of the air thus introduced assists in the more effective combustion of the gases.

LIGHTNING.—It has been calculated that the electromotive force of a bolt of lightning is about 3,500,000 volts, the current about 14,000,000 amperes, and the time to be about 1-20,000 part of a second. In such a bolt there is an energy of 2,450,000,000 watts or 3,284,182 horse power.

A JAW-BREAKER.—The champion word thus far coined, looking at it longitudinally or horizontally, is doubtless quinolineparamethenylbenzenylazoximeparacarboxylic acid. Most lexicographers will be afraid to tackle it in its entirety. Nicknames should be allowable in chemical and pharmaceutical nomenclature for such mastodonic monstrosities.

ABRASION OF GOLD COIN.—By careful experiments made at the United States Mint, says *The Iron Industry Gazette*, it has been shown that $5 are lost by abrasion every time $1,000,000 in gold coin are handled. The experiments were conducted with bags containing $5,000 each, and it was shown that the mere lifting of the 200 bags making up $1,000,000 to a truck to be removed to another vault, resulted in the loss stated, and that their transfer from the truck again made a second similar loss.

JUPITER'S DOUBLE.—It is reported that the observers at Mount Hamilton have lately kept a sharp eye turned upon the shadow of one of the moons of the planet Jupiter. This shadow seemed double, indicating that the tiny moon which cast it is also double. Since the first hint of the discovery many observations have been made through the Lick glass, all tending to confirm the original impression, to wit: That this particular satellite of the greatest of the planets is double—a dot of a moon revolving around the main moon.

HIGHEST INHABITED PLACES.—The highest place in the world regularly inhabited is stated to be the Buddhist monastery, Halne, in Thibet, which is about 16,000 feet above sea level. The next highest is Galera, a railway station in Peru, which is located at a height of 15,635 feet. Near it, at the same level, a railway tunnel 3,847 feet in length is being driven in through the mountains. The elevation of the city of Potosi, in Bolivia, is 13,330 feet; Cuzco, Peru, 11,380 feet; La Paz, Bolivia, 10,883 feet, and Leadville, Colorado, 10,200 feet.

HANDY LIGHT.—A recent novelty in electrical appliances is a handy incandescent drop light, in which the current is switched off or on by pulling the flexible cord that supports the lamp, instead of turning a key in the lamp socket. The switch is at the ceiling and the flexible conductor is fastened to the handle of the switch, which moves on the slightest pressure. A single pull lights the lamp, and a second pull extinguishes it. It is not altogether desirable that the slender conductor should always be charged, and this device very simply obviates this objection.

WORLD'S POPULATION.—In the proceedings of the Royal Geographical Society for January, 1891, it is estimated that the population of the world in 1890 was 1,487,600,000, representing an average of 31 to the square mile, and an increase of 8 per cent. during the decade. Of the continents Asia has the largest population, 850,000,000, and the lowest percentage of increase, 6 per cent. Australasia has the smallest population, 4,730,000, and the smallest average per square mile, 1.4, but the highest rate of increase during the decade, 30 per cent. Europe is the most thickly settled continent, with a population of 380,200,000, which is 101 to the square mile. The population of North America is estimated at 89,250,000, which is an average of 14 to the square mile, and represents an increase of 20 per cent. during the past decade.

ANCIENT FAITH CURE.

EVIDENCES OF FAITH CURE IN ANCIENT GREECE.

[*Prof. J. C. Rolfe, in Popular Science News.*]

Epidarus in Argolis was celebrated in antiquity as the principal seat of the worship of Asklepios (or Æsculapius, as he is more commonly called), the god of healing and son of Apollo. There were many other famous shrines of Æsculapius in the Greek world, of which those at Athens, Pergamum, and Smyrna were the most prominent; but all traced their origin directly or indirectly to Epidaurus. Its fame even crossed the seas, for as early as 293 B. C.—at the time of a destructive pestilence—the Sibylline books ordered that the worship of Æsculapius should be introduced into Rome. Accordingly, one of the sacred serpents of the god, which always accompanied the colonies from Epidaurus, was transported to Rome and established in a temple of Æsculapius, built for the purpose on the island in the Tiber. Ovid (*Met.* xv.; 420 fol.) tells us that it was Æsculapius himself, who, in the form of a serpent, migrated from Epidaurus to Rome. Serpents were always connected with his worship, and a peculiar kind of tame serpent, in which Epidaurus abounded, was kept in his temple. The Hieron of Epidaurus, as it was called in ancient times, and as it is still called to-day, was five miles distant from the town, picturesquely surrounded by hills, on one of which the god is said to have been born. The Greek traveller Pausanias has left us a description of the place as it was in the second century of our era, and the site has recently been excavated by the Greek Archæological Society. The Hieron comprised a temple of Æsculapius, surrounded by a sacred grove, and containing a statue of the god in gold and ivory; a round building, or *tholos*, like the round temples found in various parts of Italy, which was the work of the younger Polykleitos, and contained beautiful paintings by Pausias; buildings for the priests, who were also the physicians; halls for gymnastic and and musical exercises; and a sacred portico, in which the patients assembled to await the visits of the god. Just outside the sacred precinct was a magnificent theatre, also the work of Polykleitos. In Roman times extensive baths were added. To this delightful sanitarium invalids resorted from all over Greece, attracted by the fame of the marvellous cures. They spent one or more nights in the sacred portico, observing certain rules prescribed by the priests, when the god usually revealed the remedies for their diseases in a dream. Each patient, after his cure, offered a sacrifice to the god—usually a cock or a goat—and recorded on a tablet his name, the disease from which he had suffered, and the method of its cure. And we may imagine that, after the fashion of our modern quacks, the priests composed a great many testimonials themselves, to increase the fame of the sanctuary and the faith of new-comers. Among the very interesting results of the excavations at the Hieron was the discovery of two stone slabs, containing records of marvellous cures. Some specimens of these I give below. They show that while occasionally a regular course of treatment was prescribed, the majority of the cases were "faith cures." A man, having his fingers paralyzed, except one, came to the god as a suppliant, and seeing the tablets in the sacred enclosure, he did not believe in the cures, but made fun of them; and when he went to sleep he had a dream. It seemed to him that he was playing at dice beside the temple, and that just as he was about to make a throw the god appeared, caught his hand, and straightened out the fingers. And when the god was going away, he seemed to bend the hand together and to straighten out the fingers one by one; and when he had straightened them all out he asked the man whether he still disbelieved the inscriptions on the tablets in the sacred enclosure, and the man said that he did not. And, when day came, he went away cured. Unbelief is rebuked in another inscription in a way which shows that the god was not lacking in humor: Ambrosia of Athens, blind in one eye. She came as a suppliant to the god, and going around the sacred enclosure she laughed at some of the cures as incredible and impossible, that the lame and blind became whole merely by seeing a vision; and when she went to sleep she had a dream. It seemed that the god stood beside her and said that he would make her whole on condition that she would pay him by setting up in the Hieron a silver pig, as a monument of her stupidity. So saying he cut open her diseased eye and poured in a drug. And when day came she went away cured. A dumb boy came as a suppliant to the god about his voice, and when he had made the preliminary sacrifices, and gone through the usual ceremonies, the attendant of the god, looking towards the boy's father, said: "Do you agree within a year, if you obtain what you came for, to offer thank offerings?" And suddenly the boy cried out, "I do." And his father in amazement bade him speak again, and he spake again, and thereupon was cured. In the two following inscriptions the evil consequences of cheating the god out of his fee are shown: Pandarus, a Thessalian, having marks branded on his forehead. He went to sleep and had a dream. The god seemed to bind a fillet around the marks, and to order him, when he left the sacred enclosure, to take off the fillet and offer it up in the shrine. And when day came he got up, took off the fillet, and offered it up in the temple, with the marks from his forehead on it. Echedorus received the marks of Pandarus in addition to those he already had. He received money from Pandarus to offer the god at Epidaurus on his account, but did not pay the money. Now, when he went to sleep he had a dream. He thought the god came and stood beside him, and asked whether he had received any money from Pandarus as an offering to the shrine. He replied that he had received nothing of the kind, but that if the god would cure him of his marks he would dedicate a statue to him. Thereupon it appeared to him that the god bound Pandarus's fillet around his forehead, and bade him, when he went out of the sacred place, take off the fillet, wash his face in the spring, and look at his reflection in the water. And when day came he took off the fillet, on which there were no longer any marks, and saw on his forehead the marks of Pandarus, besides those which he had formerly had. The next shows the god in a kindly light: Euphanes, a boy of Epidaurus, afflicted with stone. When he went to sleep it seemed to him that the god came and asked him what he would give him if he would cure him, and he said, "Ten jackstones!" The god laughed, and said that he would help him. In the morning he went away cured. The following shows that some very desperate cases were cured: A man came to the god as a suppliant who was so blind in one eye that he had only his eyelids and nothing at all in them, but only an empty void. And some of those in the sacred place said that he was foolish to expect to see when he had absolutely no eye at all, but only the place where the eye ought to be. Now when he went to sleep a vision appeared to him. It seemed to him that the god prepared a drug, and then, separating his eyelids, poured it between them, and when morning came he went away seeing with both eyes. The success of the god was not confined to living beings: A porter was on his way to the shrine, and when he was about ten stadia away he fell. And when he got up and opened his wallet he saw that its contents were shattered. And when he saw that the cup from which his master was wont to drink was broken, he was grieved, and sat down and tried to put the pieces together. And a wayfarer seeing him said: "Why, foolish fellow, do you vainly try to put that cup together? Why, not even Æsculapius at Epidaurus could make that whole!" Now, when the boy heard this, he put the pieces in his wallet again and went to the shrine. And when he got there, he opened his wallet and took the cup out safe and sound. Then he told his master what had been said and done. And when his master heard it, he dedicated the cup to the god. Curiosity is punished: Æschines, when the suppliants had gone to sleep, climbed a tree and peered over into the sacred portico. But he fell from the tree and dashed out his eyes against some stakes. And being in a pitiful plight and blind, he prayed to the god, went to sleep, and woke up cured. Euippus carried a spear-head in the side of his face for six years, and when he had gone to sleep, the god took out the spear-head and placed it in his hand, and in the morning he went out with the spear-head in his hand. Hermodicus of Lampsacus, paralyzed. When he had gone to sleep the god cured him, and bade him go and bring into the sacred enclosure the largest stone he could find. And he went and brought the one that lies before the sacred enclosure. Even the most skeptical must have believed this, for there was the stone to prove it! Nicanor, lame. When he lay down a boy seized his staff and ran off with it. He rose and pursued him, and thereupon was cured. A man's toe was cured by a snake. This man—whose toe was afflicted with a malignant ulcer—was carried out by the attendants one day, and placed upon a seat. When sleep had come upon him, a snake coming out of the sacred enclosure cured his toe by licking it with his tongue, and then went back again. And when the man woke up he said that he had dreamed that a youth of great beauty had poured a healing drug upon his toe. Alcetas, blind. He had a dream. It seemed to him that the god came and opened his eyes with his fingers, and thereupon he saw the trees in the sacred grove, and in the morning he went away cured. I have never heard of a case in modern times of a cure of baldness by faith, but the god at Epidaurus was equal even to that. We see incidentally that baldness was rare among the Greeks: Heraieus of Mitylene. He had no hair on his head, but a great deal on his chin. And being ashamed, inasmuch as he was laughed at by the rest, he went to sleep; and the god anointed his head with a drug and made it have hair. Thyson of Hermione, he having his eyes licked by one of the dogs belonging to the sacred place, went away cured. All these inscriptions with several others are on one slab.

THE STAGE WORLD.

HOW THEATRE SCENERY IS MANUFACTURED.

Not far from the Central's tracks in Mott Haven is a big frame house. Perched on a hill, it attracts attention at once, looking gay and almost gaudy in its coat of many colors among its sober neighbors. It appears enormous compared with the country houses surrounding it, and really is a large building. A stranger might take it to be a fine country mansion; but the plain wooden fence and the untidy yard are not at all in keeping with the pretentiousness of the house, and if the stranger is at all suspicious he will think twice before settling in his mind the real purpose of the curious structure. If he were to step inside, however, all doubts would be dispelled. He would find himself at first in a pretty little office, also gay with color, and the many papers scattered about the desks in it would indicate that it was a busy place. If the stranger were to get beyond the office, he would find himself in a curious room resembling an old-fashioned garret, and filled with odd and fantastic things that might be mistaken at first for piles of rubbish, disused furniture, and old lumber. What the place actually is provided he has not satisfied his curiosity, will dawn upon him slowly as he wanders about climbing ladders and unrailed stairs, leading to different parts of the building. He will realize at last that he is among the scene painters. Formerly most of the scene painting was done in the theatres. There were some advantages attached to this method, as the scenery could be judged in the place in which it was to be used and in connection with the actors who were to appear with it. If any thing was wrong the manager could have it remedied without difficulty. But the ordinary theatre stage is not large enough and has not facilities for scene painting

such as can be obtained in structures built for the purpose, and nowadays most of the scenes are painted in buildings adapted to the work. The big building in Mott Haven has been turning out scenery by the yard every day for a long period. Adjoining the office is the shipping room, in which the scenery is boxed and prepared to be sent to the purchasers. Leading from this room is a large shop in which the stage carpenters do their work. At the time of the reporter's visit the carpenters were at work on some skeleton doors to be used by J. K. Emmet in "Fritz in Ireland." Not every carpenter is fitted for stage work, and many of the details have to be attended to by men of long experience. In making scenery the carpenter always has to bear in mind two essentials. The scenery must be very strong and at the same time very light in weight. It is all built in five-foot sections, so that it will fold up and go through an ordinary freight car door without difficulty. The corners and edges are protected by specially prepared canvas, which is glued on the wood before the nails are driven in. The carpenter must make not only smooth-working doors and windows in his scenes, but must be able to make imitation doors and windows that are not distinguishable from the genuine articles at a distance. Everywhere throughout the building the reporter found unexpected openings, trap-doors and other contrivances by means of which separate floors could be thrown into one, and large scenes could be handled without bending or crumpling them. The studio in which the painting is done has a stage in it which can be used when required for rehearsal. It is not unusual for a theatre company to go up to the studio and rehearse with the scenery before it is entirely finished. That allows the artist in charge of the work an opportunity to make such changes in detail as may be suggested to him by the movements of the actors. Sometimes, when the artist is in doubt, he dresses up his carpenters, typewriters, office boys, and even calls in the butcher's and grocer's boys from the neighboring stores, dresses them in suggestive costumes, and makes them rehearse an act or two, and thus give him a clear idea of the appearance of a scene in conjunction with the performers. This was done not long ago in connection with some scenery painted for a play in which the taking of the Bastile is depicted. Armed with old poles, and with canvas lapped around them instead of regular costumes, the makeshift people took their positions as directed by the artist at the front of the door of the Bastile, which was put up in position on the stage, and began the preliminary movements toward breaking it in. The artist secured some valuable ideas, and finished the scene, which had bothered him a great deal, without further difficulty. Before any work is done on the scene at all the chief artist lays it all out in miniature. This is done in another room in the building. The artist having received verbal instructions from the theatre manager, first makes pencil sketches of the various scenes, which he submits to the manager. When the sketches are satisfactory they are elaborated and laid in water colors. The artist is as clever with his fingers as with his brush, and with a pair of shears and some pasteboard he cuts up the scenes as he wants them and pastes the water colors on them. A little stage, built for the purpose, and with holes in which pegs supporting the pasteboard scenes can be fitted, is then used. The artist has, of course, read through the play, and he now rehearses it, as far as the scene shifting is concerned, until he himself is thoroughly satisfied. Then he calls in some assistants, and together they go over the scenes. The stage has all the details of the theatre stage. It has a curtain, footlights, boxes at the sides, and places for hanging the scenes. The rehearsal by the artist and his assistants is just as thorough as though an audience were present. In fact, an imitation audience is provided. When everything is ready the first scene is set, the curtain is pulled down, the stage is put on a table and the audience is placed in front of it. The audience consists of a lot of little pasteboard figures in seats, and the auditorium is arranged as nearly like that of the average theatre as can be. A large pasteboard wall rises back of the audience, and this has two little holes in it protected by pasteboard flaps. Through these holes the artists view the scenes. The curtain is rung up and the scenery is criticised just as it would be by the average audience. Sometimes the play is read so as to carry out the idea more completely. The peep-holes are so arranged that a view of the scenery is obtained not only from the centre but from the sides, and it is criticised from every point. Each scene is taken in turn and examined critically. If satisfactory, the theatre manager is called in to see it, too. Sometimes the scenes have to be made over in miniature many times before they will answer the manager's purpose, but no work is done on the real scenery until the manager has given his approval of the miniature. After he has once done that, he has no longer any voice in the matter. The miniature scenery has all been prepared on a certain scale, and, having been accepted, is turned over to the scene painter. The usual proportion of miniature to actual size is one half inch to two feet. The painter's first work is to lay out his canvas in squares of two feet. Then he takes up the first scene, and, following the colors in the miniature as closely as possible, begins on the actual work of painting. Scene painters have to serve a long apprenticeship before they become experts. Some of them receive very large pay, and the average make $2,500 a year. All scenes that are painted are more or less difficult to handle because of their size and bulk, but of recent years a new process of preparing scenes has come into vogue which may some day supplant painting altogether. In this dyes are used. The chief difficulty with painted canvases is that the canvas is made very heavy by the paint on it, and has to be rolled on poles to keep it from being crumpled and cracked. Where dyes are used the canvas is no heavier after it is finished than before it was treated, and can be folded and crumpled as much as required, without injuring it in any way. The only difficulty at present lies in the perfecting of this process so that the effects will be just as good as where paint is used. When the reporter was in the studio a forest scene was being painted. Even in the daylight the trees and foliage looked very natural on their white background. "We are going to make this as near natural as possible," said the artist, "and all the white is going to be cut out. That will leave only the trees and the foliage, and in order to keep that in position a web of dark threads will be pasted onto the canvas holding the severed portions together." After a scene is finished it is usually photographed, and these photographs are kept, so that when a scene is destroyed it can be duplicated without waste of time. This is made necessary by the accidental destruction of scenery at times when it is very necessary to replace it in a hurry. A manager whose scenery is burned out in Duluth may telegraph an order for its duplication and have no more bother in the matter. In connection with the scene paintings in the studio may be seen the making of what is called relief work. The realism of stage scenery of to-day has brought into being an industry which requires skill and experience. The theatre goer who marvels at the beauty of the furniture and decorations in some of the stage setting of to-day would probably be surprised to know that much of this is papier-maché work. This is by no means inexpensive, however, the mantel and relief decorations in one scene of "The Heir at Law" costing over $2,000. A great deal of expense is incurred in securing the models for this work. Sometimes the artist has to make models in clay. A mould is made from the model, and this is in turn filled with the papier-maché, which hardens and comes out in the shape required. Papier-maché is made of reddish paper, containing no sizing. It is soaked, and put into the mould in small pieces. There is ornamentation on the outside of the building which is the product of the papier-maché artist, and although it has been exposed to all sorts of weather for two years it is as good as new. Besides the stage furniture and decorations the papier-maché department turns out large quantities of scenic backgrounds and furniture for photographic studios. The trees, rustic fences, rocks and other backgrounds, which appear in some photographs, are all papier-maché, and many of them come directly from this studio. The reporter came very near turning an involuntary somersault when he casually leaned against what appeared to be a solid trunk of a tree. It was as light as a straw, and if the reporter's guide had not grabbed him he would probably have fallen into the vat in which the paper was prepared. A number of orders from distant parts of the world were being filled at the time, and the artist told the reporter that orders had been received from India, various parts of Europe, and Cape Colony. In making these backgrounds it is very essential for the artist to know on which side of the photographic studio the light enters. Before making up any orders, therefore, this point is carefully inquired into. There have been turned out at the studio recently a number of backgrounds and scenes for a photographic studio which will be used in a photograph illustrating the first twenty-seven lines of the poem "Elaine." This photograph will enter into the competition for the prize offered by the Photographers' Association of this country.

GERMAN ELECTRICIANS.

THE PROGRESS OF ELECTRIC SCIENCE IN EUROPE.

Experiments are now going on in Germany, with electric currents of very high tension, which have a good deal of interest to architects, who are called upon, each day more and more, to plan and direct the introduction of electric appliances in their buildings. Every one will remember, says *The American Architect*, the somewhat acrimonious discussion of a year or two ago about the danger of alternating currents of electricity at one thousand volts pressure, and the proposition of a company in England to use a ten thousand volt current was looked upon as wildly reckless. Now, however, a line is in process of construction to carry a current of twenty-five thousand volts. The line is to be about a hundred miles long, and is to extend from the Falls of the Neckar, at Lauffen, to Frankfort-on-the Main, along the railway route, through Heilbronn, Jaxtfeld and Hanau. It is to be used to convey a force of about three hundred horse-power, obtained from the cataract by a turbine wheel, to the building of the electrical exhibition in Frankfort, and the object of using a current of such high tension is to reduce the cost of the wire, under the rule that the smaller the wire the greater the resistance, and the higher must be the electrical pressure of the current to force its way through it. The current is obtained from a dynamo which delivers it at a pressure of one hundred volts, and is passed through a transformer, which changes it into one of much higher tension. On arriving at its destination, a second transformer changes the current back again into one of one hundred volts, suitable for actuating motors and for feeding incandescent lamps. In the experiments which have already been made, the two transformers were connected to dynamos, a wire about three miles long being stretched between them, passing in various directions about the territory connected with the station. On setting the dynamos in motion, a current of thirty-three thousand volts, as measured by a Thomson voltmeter, was developed, which was reduced without difficulty to one hundred volts by the second transformer. A trial was then made to determine how great would be the tendency of such a current to leave the wire, it having been asserted that a far more feeble current would jump several feet from a wire, to strike a man standing below. With this object, the wire was cut, and the two ends cut brought slowly together. Under a difference of tension of twenty-two thousand volts between the two pieces of wire, no spark forced its way across the intervening space until the ends had

been brought within twenty-two millimeters of each other—less than an inch. Another experiment was tried, to see whether the ordinary safety cut-off could be used with so strong a current. A ball of lead was interposed in the circuit, and the effect of the fall of a loose wire, or of a tree, was imitated by dropping a piece of wire across the circuit. The short-circuiting thus caused was instantly felt by the lead ball, which melted, with a flash and small explosion, cutting off the current.

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

May.

MEAT.—Beef, lamb, mutton, ham, kidneys, liver, sausage, veal.

GAME AND POULTRY.—Brant, pigeon, chicken, duck, turkey, goose, snipe.

FISH.—Anchovy, bass, catfish, cod, eels, clams, flounder, halibut, herring, lobsters, mackerel, mussels, perch, porgie, rock-fish, salmon, shad, shrimp, turtle, trout, sturgeon, whiting, weak-fish.

VEGETABLES.—Artichokes, beans, carrots, garlic, lettuce, onions, parsley, parsnips, potatoes, shallots, spinach, turnips, watercress, radish, rhubarb, sea kale.

PRACTICAL RECIPES.

LYONNAISE TOMATOES.—Slice four medium-sized onions and fry them in butter until they are just beginning to become yellowish, stirring often to prevent burning; then pour into the pan six large tomatoes, peeled and cut into small pieces; season highly with salt and pepper, and cook for twenty minutes, stirring frequently; add a tablespoonful of minced parsley and half a pint of stock or gravy, and simmer for five minutes; thicken a little with flour rubbed smooth in water and serve.

HERRING SALAD.—Boil and peel some good firm potatoes and cut them into dice, or slice them. Pick a small herring into bits and mix it with the potato; grate a little onion over both, and serve with French dressing.

FRIED CODFISH STEAKS.—Select a medium sized fresh codfish, cut it in steaks crosswise of the fish about 1½ inches thick, sprinkle a little salt over them and let them stand two hours. Cut into dice a pound of salt fat pork, fry out all the fat from them and remove the crisp bits of pork; put the codfish steaks in a pan of corn meal, dredge them with it, and when the pork fat is smoking hot fry the steaks in it to a dark brown color on both sides. Squeeze over them a little lemon juice, add a dash of freshly ground pepper, and serve with hot, old-fashioned, well-buttered Johnny cake.

SCRAMBLED EGG AND TOMATOES.—Put a little olive oil into a frying-pan, and when it is very hot add the pulp of two tomatoes and a quarter of a small onion chopped fine, and one or two green Chili peppers cut up very fine; add salt and pepper; cook for a couple of moments, then break two eggs into the pan, mix all together and pour onto a hot dish, and serve at once.

RHUBARB DUMPLING.—Make a nice paste of one pound flour, one-quarter pound suet, two teaspoonfuls baking powder, salt, and sufficient water to make it not too stiff. Line a bowl with the paste, fill it with rhubarb that has been sweetened and half cooked. Put a cover of paste on the top of the bowl, wetting the edges so that the two pastes will stick together. Flour a cloth and tie it about the bowl, and boil for three hours. Serve with a sauce of powdered sugar and butter beaten together.

OYSTER PLANT CROQUETTES.—To three quarts of cold water add a gill of vinegar; scrape and throw into the water the oyster plants as fast as cleaned. Drain and plunge them into boiling water slightly salted; boil fifty minutes; drain and mash them thoroughly; season with salt, pepper and butter, and bind together with yolks of eggs; roll them in cork shapes, dip in egg batter and then in crumbs, and fry in a liberal quantity of hot fat. Throwing the roots in water containing vinegar prevents them from turning black after they are scraped.

LEMON CREAM FOR CAKE FILLING.—Grate off the very top of the rind of five fine fresh lemons onto a cup of sugar, and put it in a saucepan; break in four eggs and beat well all together, then add a quarter of a pound of butter and set it on the side of the stove, where it will cook but not burn; stir frequently. Cut the lemons in half and squeeze the juice into a bowl, carefully taking out the seeds; when the cream is cooked a little add the juice, and stir constantly until it thickens; then put away in a jar to cool before using.

PLANKED SHAD.

HOW THE FAMOUS DISH IS PREPARED ON THE BANKS OF THE DELAWARE.

This is the time for "planked shad," and hotels and restaurants which are supposed to make a specialty of this delicacy have it announced in large and alluring letters on their bills of fare and in their show windows. The shad season itself is a little on the wane. Fulton Market is crowded with the fish, and boarding houses are having it with apocryphal strawberry shortcake and chocolate éclairs for Friday dinners. Shad begin to run in February in Southern waters. The best, however, comes from the Delaware and North Rivers. The Connecticut River shad are due next week. They herald the end of the season. It was only about four years ago that restaurants began advertising "planked shad." The fame of this method of preparing the fish had come from enthusiastic fishermen who had partaken of it on the Delaware. The fish are taken alive and silver skinned from the nets on the Delaware, and there is the golden opportunity. A planked shad, like a boiled lobster, must be almost cooked alive. A fire of wood and brushes, a half dozen of the shimmering fish, a quick motion of a sharp knife in each and they are disemboweled and ready for the fire. Great flat blocks of oak or pine upon which the fish, split in half, the skin towards the wood, complete the preparation. The fish are roasted in the ashes, and when ready the feast is fit for the gods. The pompano is the king of Southern waters, the shad the royal fish of the North. With either but one wine should be drunk, and that should be cold, amber colored and extra dry. The planked shad of the restaurant is another thing. Along the Delaware they have been eating the only planked shad since before Washington crossed that historic stream. Four years only has it been known in the North, and already a firm manufactures the "only genuine planks for shad," each of which is duly stamped, and they are patented as an invention. The wood comes from North Carolina, and there is an impression that shad can be properly planked only upon oak from that State. The patented plank is smooth and perfectly square. The fish is placed on this piece of board in the same manner as on the banks of the Delaware. But here all remembrance ceases. It is thrust into an oven or a hot coal fire and baked. Sometimes a gas stove is used. The surroundings are the four brick walls of a New York restaurant kitchen, and the consumer munches bread and drinks ice water on a correctly laid table until his fish is brought in. "We have a great deal of trouble with people," said a head waiter in a restaurant recently, "because they insist on taking their planks away with them. That never does, you know. Planks cost, and we can use them some ten times over. We have prepared planked bluefish and we are thinking about planked lobster, and later in the season we may see what can be done with clams."

NICKEL AND SLOT.

THE USE OF VENDING MACHINES IN AMERICA.

It is five years since P. Everitt, of London, England, introduced in America the first practical vending machine. Prior to this the vending machines were almost unknown, and the few that were put out for selling goods were of such poor construction and design that public honesty had to be relied upon to insure receiving money for goods delivered by the first rude machines. With P. Everitt's machine came a change. The confidence placed with the public in vending machines as conveniences, and giving them proper care, had been very imperfect, and occasioned heavy losses of money to those who were disposed to give machines a proper chance to do what might be expected of them. P. Everitt's invention was designed to correct the mistakes of former inventors, and to place before the public a machine that could not be robbed nor cheat the customer. The Automatic Machine Co. of New York was formed to handle Everitt's machines; and many of them were made and put out, but, as ever, the skilled robbers soon struck terror to the new enterprise. The wealthy company, however, were not to be driven from the field. With the assistance of F. M. Leavitt the machines were improved, again the public showed the upper hand, and the fight between inventors and robbers became warm. Hundreds of improvements were patented, and those of C. F. Redon and H. Bailey found popular favor, and for many months held out against mischief searchers. The company then had thousands of machines built, and were proceeding to gather their first harvest when, alas! again it was found that the mischief makers were ahead. During this time many other machine companies had commenced work, only to meet with the same disappointments, and the vending machine business seemed generally imperilled. No one had yet been able to meet the connivances of the 14-year-old boys who, by the skilful use of strings, glue, wire, etc., where playing sad havoc with the profitable part of the business. The existing companies were not able to show a balance in their favor. Many thousands of dollars had been spent, with scarcely anything but inferior machines to show where it had gone, and many inventors had quit the field from necessity. Then suddenly from the West came a surprise to the skilled machine robbers. J. A. Williams, of Kansas City, who had spent years in experiments, subjected a machine to the severe test of the same people who had thwarted the good intent of a dozen inventors. For weeks a few of these machines were up in what past experience had shown were the hardest places in New York for a machine to live. For the first time in the history of vending machines the cunning cleverness of these localities had been met, which proved it possible to make a machine that would have fair play on both sides, neither cheating nor being cheated to an appreciable extent. Then followed the formation of the Williams Automatic Machine Co., and building of machines was taken up in earnest, and many thousands have been built. Improvements have been added wherever desirable, until the public again have confidence in the machines, as shown by the large patronage when articles of merit are sold. In an interview with Mr. E. F. Bradford, 24 Union Square, New York City, who is the manager, for New York, Long Island and New Jersey, for Walter Baker & Co.'s chocolate machines, he said the superiority of the Williams machine is no longer questioned. As to the result, whether profit or loss, now rests with the merit

of the goods sold. As to our goods, we have been very successful, having an article that is known the world over. The first goods sold in this way by machines were the output of Adams & Sons, the Tutti-Frutti chewing-gum makers. Before them, however, Schilling & Stollwerk had some of their confectionery on sale in this way, but the goods apparently not being desirable the scheme was a practical failure. Everything in the way of success of these machines depends upon the quality of the goods sold. No one can be humbugged twice, and in this respect the machines are just like stores. The public demands value for its money. Such firms as Walter Baker & Co., who cannot afford to risk their reputation, have no difficulty in gaining and retaining public confidence. There have been innumerable articles sold through automatic machines, such as pens, postage stamps, note paper and envelopes, cigars, cigarettes, cologne, and even accident insurance policies. The automatic machines have also been employed to weigh, tell fortunes, offer two hands of cards, give electric shocks, imitate horse races, gambling, throw dice, make tintypes, try strength, exhibit the microscope, indicate lifting power or the strength of a blow, measure the expansion of the lungs, and to work the phonograph, but as the novelty gradually wore off they ceased to be profitable. The receipts of these machines vary according to what is offered through them, the place where they are located, and many other circumstances; but when their cost is considered, which ranges from $10 to $150, it may be appreciated that it does not take very heavy receipts to pay a good interest on the investment.

CHLORINE.—Liquid chlorine is, according to *The* (London) *Gas World*, now supplied as an article of commerce by the Badische Anilin und Soda Fabrik, Ludwigshafen, on the Rhine. Herr Knietsch has been investigating its physical properties. In thick layers it is orange-yellow; in thin, yellow. It completely absorbs blue and violet rays, allowing red, orange, yellow, and green to pass.

HOUSEHOLD SERVANTS.

THE VEXATIOUS PROBLEM VIEWED FROM TWO STANDPOINTS.

A correspondent of the *Journal of Commerce* sends that paper a plea for some consideration of the servant-girl question. He gives a most touching account of a domestic who served in his family for eight years with such fidelity that she was held in high esteem by all its members, and when, with a nice sum in the savings-bank she left to be married, she was followed to her new home with the strongest tokens of their affection. This is a beautiful picture, says our contemporary, and not quite as rare, perhaps as many would have us believe; but how to make it the history of a common experience is a problem not easily solved. If we admit that there is a serious fault on the part of the one side or the other, or of both; and if we could apportion the blame fairly between the two, we should be no nearer a settlement of the difficulty. When our correspondent hired his faithful domestic she was engaged at her asking price, which was seven dollars a month. The wages of such helpers has nearly or quite doubled since that day. The writer asks if there is any reason for such an advance. The board is furnished, and therefore the cost of living, whether less or more, does not enter into the question of the rate of pay. The other necessary expenses are probably no higher, taking all things into consideration, now than then. It does cost more to dress the average servant-girl now than it did thirty or forty years ago, not because the same articles are more expensive, but because the style of attire has undergone a material change. The calico that would "wash," and the plain fabrics which than composed the one better dress, can be had for less money, but the girl is not content with these. She must have expensive materials made and trimmed in the most fashionable style. The shawl that then cost only a month's wages and would last for years is superseded by a cloak or other made garment costing three or four times as much, and this will do only for one or two seasons. A fashionable hat or bonnet exchanged or renewed twice a year takes the place of the simple covering of the head with its one ribbon, made into a dainty bow, that once sufficed. Does any one say that servants dress above their station, and that this is a matter needing a speedy and thorough reform? If we answer in the affirmative we shall be met at once with the fact that the extravagance did not begin in the kitchen, and the reform cannot be set on foot from that at a starting point. There is no wider difference in the attire of the servants, comparing 1850 with 1890, then there is in the wardrobe of the mistress. The former is only a copy or imitation of the latter. The servants will not go back to calico and plain delaine while the mistress and her daughters shine in silks and satins, and dainty robes, and costly furs. The reform to be effective must begin up stairs. We undertake to say that when the majority of employers will spend no more for their outfits than they did at the date suggested as a standard, the kitchen domestics can be won to the same measure of economy. But the difficulty is not wholly or mainly in the cost of attire. It is, no doubt, true that inordinate vanity fed by rich dresses, fine cloth or velvet cloaks, and hats gay with flowers and tossing plumes, disqualifies a domestic in some measure for respectful service and the plain, hard work of the household; but the chief reasons for the tone and temper found to be most objectionable lie beyond the outside garments. It requires special grace to be a servant. Not alone in the household, but in the State and throughout the world, the great need is service. "I am among you as one that serveth," said He who in His nature was "Master and Lord." A quaint old writer declares that "We are free and equal" is the lie that sent the rebellious angels to their sad estate; and it is this pride that unfits so many of the human race for their proper calling. The law of the universe, from the throne of the Highest to the minutest atom, is one of subjection, and willing service is the only perfect obedience. They who deny the doctrine of man's fall and his consequent innate depravity can give us no explanation of the fact so patent to the commonest observation, that down to man and below him the law is obeyed, and in the whole range of our vision he is the only rebel to whom, while he remains unchanged, all obedience to another is a hardship requiring constant self denial. Faithful service cannot be bought with money. It must be prompted from within, and only love can inspire and secure it. Wherever we have an instance of untiring devotion on the part of a servant, it will be seen that there is a real attachment between the laborer and the employer. The domestic, working for hire in the mer-

Buffalo Lithia Water, Spring No. 2, in Bright's Disease, Gout, Stone in the Bladder, and Diseases Generally of Uric Acid Diathesis, Etc., Etc.

DR. WM. A. HAMMOND, of Washington, D. C., Surgeon General U. S Army (retired), Professor of Diseases of the Mind and Nervous System in the University of New York, etc.

"I have for some time made use of the BUFFALO LITHIA WATER in cases of AFFECTIONS of the NERVOUS SYSTEM, complicated with BRIGHT'S DISEASE OF THE KIDNEYS or with a GOUTY DIATHESIS. *The results have been eminently satisfactory.* Lithia has for many years *been a favorite with me in like cases, but the* BUFFALO WATER CERTAINLY ACTS BETTER THAN ANY EXTEMPORANEOUS SOLUTION of THE LITHIA SALTS, and is, moreover, better borne by the stomach. I also often prescribe it in those cases of CEREBRAL HYPERÆMIA resulting from OVER MENTAL WORK—in which the condition called NERVOUS DYSPEPSIA exists—*and generally with* MARKED BENEFIT."

DR. WM. B. TOWLES, Professor of Anatomy and Materia Medica, in the Medical Department of the University of Virginia.

"BUFFALO LITHIA SPRINGS, No. 2, belongs to the ALKALINE or, *perhaps, to the* ALKALINE SALINE Class, *for it has proved far more efficacious in many diseased conditions than any of the simple* ALKALINE waters.

"*I feel no hesitancy whatever in saying that in* GOUT, RHEUMATIC GOUT, RHEUMATISM, STONE *in the* BLADDER, and in all diseases of URIC ACID DIATHESIS, *I know of no remedy at all comparable to it.*

"*Its effects are marked in causing a disappearance of* ALBUMEN *from the urine. In a* single case of BRIGHT'S DISEASE *of the* KIDNEYS, I witnessed *decided beneficial results from its use, and from its action in this case I should have great confidence in it as a remedy in certain stages of this disease.* In DYSPEPSIA, especially that form of it in which there *is an excessive production of* ACID *during the process of nutrition*, in some of the PECULIAR AFFECTIONS *of* WOMEN, notably in SUPPRESSION of the MENSES, and in CHRONIC MALARIAL POISONING, etc., I have found it highly efficacious."

DR. G. HALSTEAD BOYLAND, late Professor of Surgery, Baltimore Medical College, late Surgeon French Army (Decorated), Member Baltimore Academy of Medicine, Member of American Medical Association.

"In BRIGHT'S DISEASE of the KIDNEYS, ACUTE or CHRONIC, BUFFALO LITHIA WATER, Spring No. 2, is, in my experience, *without a rival*, whether in the PARENCHYMATOUS form or INTERSTITIAL NEPHRITIS. In cases in which the ALBUMEN in the URINE reached as high as 50 per cent., I have known it under a course of this water gradually diminish and finally disappear, at the same time other alarming symptoms were relieved and the sufferers restored to health.

"In STONE in the BLADDER of the RED LITHIC ACID and the WHITE PHOSPHATIC DEPOSIT, the SOLVENT power of this water is *unmistakable*."

Water in cases of one dozen half gallon bottles, $5.00 f. o. b. here.

THOS. F. COODE, Proprietor, BUFFALO LITHIA SPRINGS, VA.

cenary spirit, cannot reach even the lowest ideal of perfection, and must come far short of the ministry which the comfort of the household requires. The girl in the kitchen, the chamber or the laundry is thinking only of keeping her place at the smallest outlay of energy and the least personal inconvenience. There is no question in her heart of how much she can do to make the home happy and to anticipate every reasonable wish of her employer, but, on the other hand, of how many privileges and exemptions she can secure by persistent stipulation. She is not peculiar in this; it is the effort of imperfect human nature the world over, which is always crying "Give, give," and not, as in the law of service, "What can I possibly add by my personal ministry to the sum of human happiness?" It is useless by organization or combination among employers to better this state of things through the application of external force. It needs conversion and a change of heart, and this is never reached in any case by intimidation or outside pressure. If there is any truth in the gospel story, men are to be renewed in their being by the exhibition and attractive force of a self-denying and suffering Love that seeks after them with infinite tenderness and patience, and woos them at last to accept its reforming ministry. Suppose that they who seek for loving service in their households should imitate this blessed example. Some one may say that it will not be successful. Not always, certainly, for how often are the masters and mistresses themselves indifferent to the voice evermore sounding in their ears and to the pleading of One that knocks at the door of every heart! We asked a lady who was complaining that she never had a faithful domestic, or one for whom she had the least personal regard, if she had ever sought to win the attachment of a servant with the loving tenderness and forbearance that had turned her own heart heavenward! She burst into tears at our question, and said that she had never thought of it! We added that it might be met with insolence; that it might be regarded as an exhibition of weakness; that it might be taken advantage of by the servant as showing a want of dignity and a failure to assert a proper authority. In short, that it might be treated as those who never worked as household drudges too often meet the proffers of a Divine compassion. But even so it is worth trying. It is the more excellent way. He that would have friends must show himself friendly. He that would secure service to himself must give himself up to loving service wherever he can make his ministry a means of good to others. Servants in the kitchen have the same hearts that beat under satin in the parlor, are subject to like passions, and are melted into fruitful devotion by the same ministry of love. Is not the experiment worth the effort when the object to be gained is so important?

Indigestion

Horsford's Acid Phosphate.

A preparation of phosphoric acid and the phosphates required for perfect digestion. It promotes digestion without injury, and thereby relieves those diseases arising from a disordered stomach.

Dr. E. J. WILLIAMSON, St. Louis, Mo., says: "Marked beneficial results in imperfect digestion."

Dr. W. W. SCOFIELD, Dalton, Mass., says: "It promotes digestion and overcomes acid stomach."

Dr. F. G. McGAVOCK, McGavock, Ark., says: "It acts beneficially in obstinate indigestion."

Descriptive pamphlet free.

RUMFORD CHEMICAL WORKS,

PROVIDENCE, R. I.

BEWARE OF SUBSTITUTES AND IMITATIONS.

Caution:—Be sure the word "Horsford's" is *printed* on the label. All others are spurious. Never sold in bulk.

Fine Table Wines

From our Celebrated Orleans Vineyard.

Producers of the

ECLIPSE CHAMPAGNE,

530 Washington St. SAN FRANCISCO.

Arpad Haraszthy & Co.

GENERAL AGENCIES:

NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOSEPH R. PEEBLES' SONS CO., 73 West Fourth Street.
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.

BUSINESS NOTES.

UNCLE SAM BUYS IT.

On May 7, 1891, the contract for supplying the U. S. Army with baking powder was again awarded the Cleveland Baking Powder Co. The fact that the Government requisition calls for baking powder "equal in quality to Cleveland's" is a high tribute to the great merit of the powder. Cleveland's is the standard.

HORSFORD'S ACID PHOSPHATE

Makes delicious lemonade. A teaspoonful added to a glass of hot or cold water, and sweetened to the taste, will be found refreshing and invigorating.

DR. D. SCHAUB, Muncie, Ind., says: "Have used it in bilious disorders and it did all that was desired. I think it an invaluable remedy."

A COMMERCIAL PARADOX.

Gordon & Dilworth, the well known fruit packers and preservers, some two years since, got so far behind their orders that they were compelled to stop all their advertising. They intended to resume the next year, but found that they had so firmly established themselves that they could sell all the goods they could make without advertising, until they could increase their manufacturing facilities. This, however, proves that judicious advertising brings trade, but that only good goods can retain it.



As your grocer for

The Cleveland Cook Book,

(free), containing over 350 proved receipts. If he does not have it, send stamp and address to the Cleveland Baking Powder Co., 81 Fulton Street, New York, and a copy will be mailed you. Please mention this paper.

25 CTS PISO'S CURE FOR CURES WHERE ALL ELSE FAILS. Best Cough Syrup. Tastes good. Use in time. Sold by druggists. CONSUMPTION 25 CTS

Armour's

Extract of BEEF.

The best and most economical "Stock" for Soups, Etc.

One pound equals forty-five pounds of prime lean Beef.

Send to us for our book of receipts, showing use of **ARMOUR'S EXTRACT** in Soups and Sauces.

ARMOUR & CO., Chicago.

THE ORIGINAL AND GENUINE (WORCESTERSHIRE SAUCE).



LEA & PERRINS' SAUCE

In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—

Lea & Perrins

Beware of Imitations; see that you get Lea & Perrins'

For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS. NEW YORK.

HOSMER, CRAMPTON & HAMMOND,

NO. 43 COMMERCIAL STREET,

BOSTON.

COMMISSION MERCHANTS,

HAY, STRAW, FLOUR & GRAIN.

E. B. HOSMER, G. W. CRAMPTON, BENJAMIN HAMMOND, A. L. ROBINSON.

BOSTON HAY AND STRAW MARKET.

Hay, choice to fancy, in large bales	$14.00 to $15.00
Hay, choice to fancy, perpetual pressed bales	14.00 to 14.50
Hay, fair to good	12.50 to 13.00
Hay, poor to ordinary	11.00 to 12.00
Hay, Clover and Clover mixed	10.00 to 12.00
Hay, swale	8.50 to 9.00
Straw, Rye, good to prime	17.50 to 18.00
Straw, Oat	8.00 to

BOSTON, May 18, 1891.

Receipts for the week are 212 cars of Hay and 15 cars of Straw; corresponding week last year, 264 cars of Hay and 27 cars of Straw. As is usual at this season of the year, the receipts are moderate and the stocks here well cleaned up. The market is firm with some fancy cars selling above our quotations, and no hay grading as close as on a dull market. We think it worth a special effort to get shipments in now, before the larger receipts, and consequently lower prices usual in June and July. Rye straw is steady at quotations.

H. F. WILSON,

WIRE BALE TIES,

458 WEST 38th STREET, New York.

THURSTON'S IVORY PEARL TOOTH POWDER

WILL KEEP THE TEETH IN PERFECT CONDITION AND THE GUMS HEALTHY.

Price 25 & 50 Cents PER BOTTLE.

We shall be glad to supply our readers with any periodical published at club rates.

Send us a postal naming periodical and we will quote you prices.

ANALYST PUBLISHING CO.,
19 Park Place,
New York.

HARTSHORN'S SELF-ACTING SHADE ROLLERS

NOTICE SCRIPT NAME OF Stewart Hartshorn ON LABEL, AND GET THE GENUINE

HARTSHORN

HAMMOND'S

CELEBRATED

Calumet Oleomargarine

Strictly pure, cheap and healthful.

Ask your grocer for it.

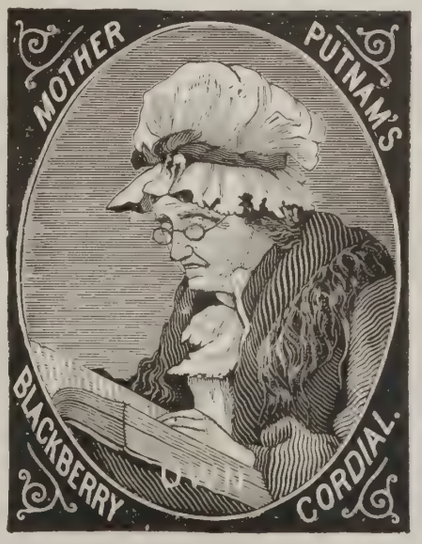
Put up in packages of all sizes, also prints and rolls.

C. H. HAMMOND CO.,

607 to 615 THE ROOKERY,

CHICAGO.

Also offices at Boston, South Omaha, Neb., and Hammond, Ind.



C-U-R-E-S

DIARRHŒA, DYSENTERY,

MALARIA,

all ailments of the bowels. Is an anti-dyspeptic, and a **DELICIOUS INVIGORATIVE.** Leading Physicians prescribe it for **ADULTS AND CHILDREN.** *FOR SALE* by Druggists and dealers.

RHEINSTROM BROS., DISTILLERS OF FINE LIQUEURS,
54, 56, 58, 60, 62 E. 3rd STREET, CINCINNATI, O.

GOLD MEDAL, PARIS, 1878.

W. BAKER & Co.'s Breakfast Cocoa



from which the excess of oil has been removed,

Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

We can save you Fifty Dollars when you Build. See



A complete set of Plans to build from, simply state about price of dwelling desired. 25 cts. in stamps. Our book "Beautiful Homes." 25 cts. Our monthly book "The National Builder," 25 cts. Address

The National Builder, Adams Exp. Bldg., Chicago, Ill.

THE GREAT AMERICAN TEA COMPANY

LADIES

GET UP ORDERS.
Entire New Departure.
A HANDSOME PRESENT TO EVERY SUBSCRIBER.

THE GREATEST INDUCEMENTS EVER KNOWN TO INTRODUCE OUR NEW GOODS.

If you enjoy a cup of **Delicious Tea** send in your orders. 3½ lbs. Fine Tea by mail on receipt of $2 and this "ad". Beautiful premiums given away with $5 orders and upwards. The **most extraordinary bargains** ever offered, during the next thirty days. China Tea Sets and Lamps with $10, $15 and $20 orders to introduce our excellent **New Crop Teas.** Formosa and Amoy, Oolong, Congou, English Breakfast, Japan, Imperial, Young Hyson, Gunpowder, Sun Sun Chop and Mixed. Good mixed teas 20c. per lb. Headquarters in United States for Fine Teas. One pound of our tea will go farther than three pounds of trash. Thirty years' national reputation for selling **Pure Goods Only.**

THE GREAT AMERICAN TEA COMPANY,
P. O. BOX 289. 31 and 33 Vesey Street, New York.

PUBLICATIONS OF THE
ANALYST PUBLISHING CO.

THE AMERICAN ANALYST.
Weekly. Every Thursday. $1 per year.

THE ROOFER, TINNER AND SHEET-IRON WORKER.
Monthly. 15th each month, $1 per year.

THE LEATHER MANUFACTURER.
Monthly. 1st each month. $3 per year.

Reliable agents and representatives wanted everywhere on liberal terms. Address

ANALYST PUBLISHING CO.
19 PARK PLACE, NEW YORK.

PURE PEPSIN

In Powder and Scale.
MANUFACTURED BY
ARMOUR & COMPANY, Chicago.

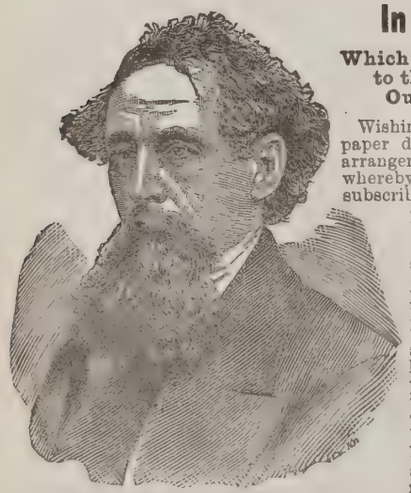
Guaranteed free from adulteration or make-weights; of excellent physical properties and high digestive power.

Under similar conditions, **ARMOUR'S PEPSIN** will exhibit greater activity than any other pepsin now before the profession.

The Manufacturers will be pleased to supply members of the Medical Profession with samples of their Pepsin, and with full details regarding digestive strength, if desired.

GRAND PREMIUM OFFER!
A SET OF THE
WORKS OF CHARLES DICKENS,
In Twelve Large Volumes,

Which we Offer with a Year's Subscription to this Paper for a Trifle More than Our Regular Subscription Price.


CHARLES DICKENS.

Wishing to largely increase the circulation of this paper during the next six months, we have made arrangements with a New York publishing house whereby we are enabled to offer as a premium to our subscribers a **Set of the Works of Charles Dickens, in Twelve Large and Handsome Volumes,** with a year's subscription to this paper, for a trifle more than our regular subscription price. Our great offer to subscribers eclipses any ever heretofore made. Charles Dickens was the greatest novelist who ever lived. No author before or since his time has won the fame that he achieved, and his works are even more popular to-day than during his lifetime. They abound in wit, humor, pathos, masterly delineation of character, vivid descriptions of places and incidents, thrilling and skillfully wrought plots. Each book is intensely interesting. No home should be without a set of these great and remarkable works. Not to have read them is to be far behind the age in which we live. The set of Dickens' works which we offer as a premium to our subscribers is handsomely printed from entirely new plates, with new type. The twelve volumes contain the following world-famous works, each one of which is published *complete, unchanged, and absolutely unabridged:*

DAVID COPPERFIELD,
MARTIN CHUZZLEWIT,
NICHOLAS NICKELBY,
DOMBEY AND SON,
BLEAK HOUSE,
LITTLE DORRIT,
OUR MUTUAL FRIEND,
PICKWICK PAPERS,
BARNABY RUDGE AND CHRISTMAS STORIES,
OLIVER TWIST AND GREAT EXPECTATIONS,
THE OLD CURIOSITY SHOP AND THE UNCOMMERCIAL TRAVELER,
A TALE OF TWO CITIES, HARD TIMES AND THE MYSTERY OF EDWIN DROOD.

The above are without question the most famous novels that were ever written. For a quarter of a century they have been celebrated in every nook and corner of the civilized world. Yet there are thousands of homes in America not yet supplied with a set of Dickens, the usual high cost of the books preventing people in moderate circumstances from enjoying this luxury. But now, owing to the use of modern improved printing, folding and stitching machinery, the extremely low price of white paper, and the great competition in the book trade, we are enabled to offer to our subscribers and readers a set of Dickens' works at a price which all can afford to pay. Every home in the land may now be supplied with a set of the great author's works.

"BILLET"

are

Carefully Selected French Sardines, Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS

TO THE CONSUMER!
"PAVONIA BEER"
MANUFACTURED FROM THE
Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,
HOWARD STREET, BOSTON, MASS.

OUR GREAT OFFER
TO SUBSCRIBERS
TO THE
AMERICAN ANALYST.

We will send the **ENTIRE SET OF DICKENS WORKS,** *in* **TWELVE VOLUMES,** *as here described, all postage prepaid by ourselves, also* **THE AMERICAN ANALYST** *for* **ONE YEAR,** *upon receipt of* **$1.50,** *which is only* **50** *cents more than the regular subscription price of this paper.* Our readers, therefore, practically get a set of Dickens' works in twelve volumes for only **50** cents. This is the grandest premium ever offered. Up to this time a set of Dickens' works has usually been $10.00 or more. Tell all your friends that they can get a set of Dickens' works in twelve volumes, with a year's subscription to **THE AMERICAN ANALYST** for only **$1.50.** Subscribe now and get this great premium. If your subscription has not yet expired, it will make no difference, for it will be extended one year from date of expiration. We will also give a set of Dickens', as above, free and post-paid, to any one sending us a club of three yearly subscribers.

ADDRESS:
THE ANALYST PUBLISHING CO.
No. 19 PARK PLACE,
NEW YORK.

Tabasco Pepper Sauce

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced, by connoisseurs, to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY,

NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

To Subscribers, Readers and Advertisers.

SUBSCRIBERS' attention is called to the great variety of interesting and instructive subjects treated in this number. We respectfully ask the co-operation of our subscribers in extending our Subscription list, which will enable us still further to increase the value of the AMERICAN ANALYST to them.

The CASUAL READER is specially requested to examine our liberal premium offer.

ADVERTISERS who do not know of this Journal already, are respectfully referred to article headed "A Business Benefit."

ALL are kindly requested to peruse this number thoroughly.

The AMERICAN ANALYST can be had at any news stand in the United States. Any newsdealer will take orders for it, the American News Company being our wholesale agents. All postmasters will receive subscriptions.

NATRONA BI-CARBONATE OF SODA.

(ABSOLUTELY PURE.)



The nature of the raw material from which NATRONA BI-CARBONATE OF SODA is made—viz., kryolith, a mineral containing *pure sodium*—insures a purity and uniformity of product which cannot be obtained from any other known material. In making BI-CARB. SODA from any other raw material, the use of sulphuric acid is a necessity, but none is used in any part of the process of making NATRONA BI-CARB.; hence its entire freedom from the slightest trace of arsenic, which is always present in ordinary soda. Its absolute purity and entire freedom from all traces of *sulphate of soda*, common salt and other impurities, render NATRONA BI-CARB. NEARLY TASTELESS, and being bolted through the finest bolting-cloth, insures the finest stage of division.

To these indisputable facts the attention of CONSUMERS of soda is specially called. They are IMPORTANT, and should influence both those who use and those who sell soda, to buy and sell NONE BUT THE BEST.

The NATRONA BI-CARB. Soda is kept in stock by almost every wholesale druggist and grocer throughout the United States, of whom it may be ordered.

Natrona Bi-Carb. Soda is unequaled by any other brand of English or American Manufacture.

PENNA. SALT MANUFACTURING CO.,

NATRONA CHEMICAL WORKS. PHILADELPHIA, PA.

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.



RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,
184 Greenwich St., N.Y.

INSTRUCTIONS TO SUBSCRIBERS.

The **Names of all Subscribers** are registered as soon as received, and paper is always promptly forwarded.

Postage.—The postage to all parts of the United States and Canada is paid by the publisher.

Remittances of small sums may be made with comparative safety in ordinary letters. Sums of one dollar or more must be sent by registered letter or P. O. money order, otherwise we cannot be responsible for same. Silver must not be sent in a letter.

Postage Stamps will be received for the fractional part of a dollar, and in any amount when it is impossible for patrons to procure bills, but you must send one or two-cent stamps only.

SUBSCRIPTIONS.—The AMERICAN ANALYST will be sent one year to any subscriber for ONE DOLLAR. New subscriptions can begin at any time.

We Stop the Paper at the expiration of the time paid for unless a renewal of subscription is received. Those whose subscriptions have expired must not expect to continue to receive the paper unless they send the money to pay for it.

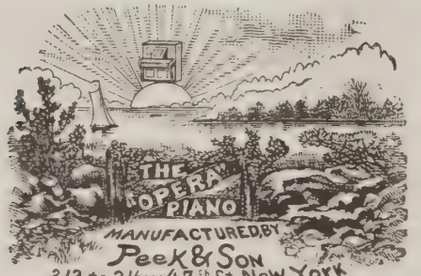
Change of Address.—Subscribers wishing their addresses changed must invariably give their former as well as new address.

Missing Numbers.—It occasionally happens that numbers of our paper sent to subscribers are lost or stolen in the mails. In case you do not receive any number when due, write us a postal card and we will cheerfully forward a duplicate of the missing number.

Most Important of All.—In every letter that you write us, never fail to give your full address, plainly written—name, post-office, County and State.

Address all letters to

THE ANALYST PUBLISHING CO.,
19 Park Place, New York.



A HIGH-GRADE PIANO
AT A VERY MODERATE PRICE.
NEW DESIGNS. FANCY WOODS.
Terms Easy. + Monthly Instalments.
TWO, THREE AND FOUR PEDALS.
Catalogues, Prices, Terms, Etc., sent to any address.
EVERY PIANO WARRANTED 5 YEARS.
(Mention this Paper.)

DETECTIVE! WE WANT A MAN IN every **locality** to act as **Private Detective** under our instructions. Send stamp for particulars.
WASHINGTON DETECTIVE AGENCY,
Box 787. Washington, Iowa.

THE LABORATORY.

To Inventors, Manufacturers and Applicants for Patents

The AMERICAN ANALYST may be consulted upon all matters involving theoretical or applied chemistry. Advice and opinions given. Analyses and assays made. Patents perfected and secured. Terms reasonable.
Address, AMERICAN ANALYST,
19 Park Place, N. Y.

SWIFT'S
CHOICE
Chicago Dressed Beef
AND
MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,
UNION STOCK YARDS,
CHICAGO, ILLS.

We shall be glad to supply our readers with any periodical published at club rates.
Send us a postal naming periodical and we will quote you prices.
ANALYST PUBLISHING CO.,
19 Park Place, New York.

GLENN'S
SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,
C. N. CRITTENTON,
115 FULTON STREET,
NEW YORK.

Be progressive and keep abreast of the times. Avoid dyspepsia by using **Lard Compound** and **Cottolene,** a substitute for lard.
The highest medical authorities pronounce them healthful; and expert cooks commend them.
Our **Clairette** brand of cotton oil soap is the purest and best laundry soap in the market; as pleasant to the hands as genuine castile.

N. K. FAIRBANK & CO.,
CHICAGO AND ST. LOUIS.

The Standard of Excellence.
KINGSFORD'S
OSWEGO
Pure and Silver Gloss



STARCH
KINGSFORD'S
OSWEGO CORN STARCH
FOR
Puddings, Custards, Blanc-Mange, Etc.
THE PERFECTION OF QUALITY.
WILL PLEASE YOU EVERY TIME.
Always ask your Grocer for these goods.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 22. NEW YORK, THURSDAY, MAY 28, 1891. WHOLE No. 222

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - - $1 per year.
Single Copies, - - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.

Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.

Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,

H. LASSING, M. D., } *Editors.*
T. P. McELRATH, }

No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

A Back Yard Fantasy 257
Care of Clothing 257
Domestic Dietetics 257
Editorials 253
Greenland Exploration; A Solemn Doubt; Hours for Study.
European Entertainments 258
Heat 255
Men, Birds and Kites 256
Rust 259
Women's Work—(*Concluded*) 254

GREENLAND EXPLORATION.

Some further details are announced regarding the projected Arctic exploration to be conducted by Civil Engineer Robert E. Peary, U. S. N., which was mentioned in these columns some weeks ago. As then stated Mr. Peary in 1886 sailed on a whaler to the west coast of Greenland, and thence crossed the glaciers in an easterly direction for about one hundred miles. Mr. Peary's object was to demonstrate the feasibility of traveling in Greenland on top of ice and snow. His forthcoming expedition is founded upon the knowledge he gained then. About June 5, accompanied by Mrs. Peary, a negro servant and several scientific men whose names have not yet been made known, Mr. Peary will sail from here on a Danish steamer especially built for the Arctic seas. They will go up the west coast of Greenland to Whale Sound, which is not far south of Smith Sound, famous in many polar expeditions. It is expected that Whale Sound will be reached early in August. The rest of this season will be spent in putting up Winter quarters on the shore, laying in a store of meat, collecting specimens, making inspections of the inland ice, and, if the weather should be favorable, establishing an advance depot of supplies near the southern angle of Humboldt glacier. Next Winter will be passed in a house near the head of Whale Sound putting the sledges together, preparing the clothing and traveling equipment and carrying on snowshoe and skier practice. It is very important that the members of the expedition should be experts with skiers, for much of the traveling will probably have to be done on them. As early as possible in the Spring of 1892, Mr. Peary and his party will try to reach the north end of Greenland, using the inland ice as a highway. They will first go to Humboldt glacier, thence to the head of Peterman Fiord, where a second depot of supplies will be established; thence along the inland ice, keeping in sight of the west coast, if possible, to the head of Sherard Osborn Fiord, where a third supply depot will be made; thence to the head of De Long Fiord, which will be made a fourth depot and thence to the northern end of Greenland, if it should be possible. The American Geographical Society has contributed $1,000 toward the expenses of the expedition. The Academy of Natural Science bears a portion of the expense, which in all will not be more than $7,000. Mr. Peary is about 34 years old, a native of Maine, of tough and wiry physique, and he has trained himself particularly for Arctic expeditions. He was for two years engaged in the preliminary surveys for the Nicaragua Canal, and until recently was the civil engineer at the League Island Navy Yard. The Navy Department has granted him a furlough in order that he may go upon this expedition.

A SOLEMN DOUBT.

In a recent issue the *New England Grocer* propounded editorially the stupendous proposition: "Can a man keep a grocery store and be a Christian?" As the editor of that enterprising journal is an expert in at least the grocery end of the matter the fact that he leaves the riddle unanswered, suggests the suspicion that he found it embarrassing to enter too deeply into the discussion. In the meantime the wide-awake public will entertain its own views on the subject, which, perhaps, will not be wholly untinged by local bias. If the question, for instance, were to be propounded in New York, we fear there is a numerous element here that would give it an earnest and cheerful negative response. The grocer's profession in this metropolis is not sustained on even a parallel plane with cleanliness in the proverbial proximity to sanctification which that latter admirable attribute enjoys. It would not indeed be overstating the matter to declare that here the grocer and godliness are the moral antitheses of each other. Sufficient evidence of this unfortunate state of things was afforded by the recent "Food and Health" farce enacted in this city, where an unsuspecting and guileless public were cozened into divesting themselves of a large sum of money through the working of a wholesale and unscrupulous advertising scheme in which among a few reputable dealers many of the principal "snide" concerns in the city were represented, together with a striking array of country circus "side shows." The details, however, we have already published. Emboldened by success, the projectors of that absurdity now propose to develope their three weeks free lunch advertising dodge of last April into a permanent enterprise of similar character, having as its ostensible purpose the educating of the public in the matter of pure and wholesome food. The real purpose, judging as we are justified in doing from last month's manifestation, will be to attract attention to the persons who hire (and pay for) concessions of space for the exhibition of their wares. "Pure food" will mean whatever is advertised to the public eye through this scheme, and the public health will be the subject of about as great solicitude as the Constitution of the Argentine Republic. We do not wish to be unjust. What we say about the moral inefficacy of the grocer is intended kindly. We like him personally, whatever prejudices we may have against his watered milk, his sanded sugar, his glucose syrup, his bread-toast coffee—and to condense in a word an interminable list, his eccentricities generally, which, like the man's wooden leg may have been inherited and unintentional. But with all our affection for him, individually, we cannot reflect upon him as a class without repeating the unanswered conundrum of our New England contemporary. The supreme absurdity of this new project is the name by which they propose to designate it, "The Healtheries." Has English dudeism such a hold upon this community that it must find vent through the grocery store? We shall expect next to see the grocer's boy equipped in stunning collars and plaid gaiters, balancing his package of codfish and turnips on one arm while with the other he is swinging his huge-headed cane with the ferrule held carefully uppermost. The word is confessedly imported from London, and is as absurd as its projected application. Its only recommendation is its alliterative aptness. The grocer is not wholly unsuspected of stealthery, leading presumably to wealthery, of which a fresh instrument is, he hopes, the forthcoming healthery.

HOURS FOR STUDY.

Do our school children devote sufficient time to study? A writer in the Boston *Transcript* calls attention to the fact that in a recent magazine article Professor Montague of Amherst College asserts that a French boy in a Paris lycée spends, out of the twenty-four hours of the day, nine hours in sleep, three and one-quarter hours at meals and in recreation, four hours in recitation, and seven and three-quarter hours in study. A boy in the Boston Latin School, a school

of corresponding grade, spends three and one-third hours in recitation, and three required hours in study—one in school and two at home. This explains in part why a French boy of eighteen is more advanced than an American boy of eighteen. And yet our boys seem to be as many hours over their books as their health will bear. Perhaps they lack training for the concentration of their powers both in work and in exercise.

WOMEN'S WORK.

THE MANIFOLD OCCUPATIONS OPEN TO WOMEN IN FRANCE.

(*Concluded from page* 242.)

In the professional schools the instruction is entirely free, but the number of pupils is limited. The ages range from 13 to 18, and only French candidates are permitted. In these schools the pupils cannot live on the premises. The scholars are taught trades, such as fine white sewing, ironing, stay making, artificial flower making, millinery, dress-making, and so forth, as well as household work. There are also classes for cooking and washing, and the pupils are further taught how to market with advantage. The number of pupils varies in the different schools, but none admit more than 200 at a time. To these professional schools commercial classes are attached, which are held in the evening. Here book-keeping is taught (double entry). The school for the professional education of young girls, founded by Elise Lemonnier, has produced excellent results. In the Philotechnique Association a section named after Victor Cousin is also open to women. The classes are held in the evening, and there are no formalities for entrance. The high schools for women comprise the Normal School at Sevres, twenty-six lyceums, of which two are in Paris, and twenty-six colleges. The educational curriculum differs from that for boys. For entrance the highest French diploma is required, or a foreign one that answers to it. The candidate must not be less than 21 years of age, and must submit to the preliminary trials fixed by the law of 1860. The salary of the directresses is fixed at a minimum of 6,500 francs ($1,300), and that of the under teachers at 1,400 francs ($280). For the schools in Paris the salary is slightly higher. The stewards, or rather clerks, of the high schools must pass two years' apprenticeship in one of them, and must produce a certificate. Five years' service is necessary before they can receive promotion. At Sevres the mistresses have board, lodging and washing free. The teachers of drawing receive from 1,600 ($320) to 3,000 francs ($600) a year, in return for which they must give sixteen hours' teaching a week. They are paid extra for supplementary lessons. The teaching of gymnastics is also confided to ladies in the girls' schools. They must have a certificate of competency and give at least twelve hours' lessons a week. The salary is from 1,600 ($320) to 2,000 francs ($400), and sixteen hours' service may be required of them every week without extra pay. The date of the *concours* for these posts is fixed every year by the Minister of the Interior. Besides the usual documents, aspirants must produce a medical certificate of their physical capacity. The average salary of a governess is from 1,200 francs ($240) a year, but as this is a private matter it, of course, varies, according to the generosity of the particular family in which she is employed. The Bank of France employs a very large number of women as accountants in the classification of bills, in the classification of coupons, and in the department of printing and binding. The ladies employed in this category are called *dames titulaires.* They are paid 3 francs (60 cents) a day, and are required to pass a preliminary examination in writing, spelling and arithmetic. They must be from 18 to 35. In the printing office an apprenticeship of two years is required as pamphlet sewers. These women work in the same shop as the men, and are paid at exactly the same rates. After twenty years' service they are retired with a pension of 400 francs ($80). Recommendations from influential persons are requisite for obtaining places in the Bank of France. In order to obtain employment in the administration of the railways it is necessary to be either the daughter, wife or widow of an employee. Nearly 500 ladies are thus employed. Indeed, at French railway stations the ticket sellers are nearly all women. In the railways there is not the same just payment as in the other State departments; here the women are paid just half as much as the men, while working quite as much. The *Credit Foncier* employs about 2,000 women on its staff; the entrance is by examination and the limit of age, 16 to 35. Candidates must produce good conduct certificates, both official and private, and must receive at the examination a maximum of marks, that is to say, 12 out of 20. The salary in the first stage is 3 francs a day, rising to 1,700 a year ($340). A tax of 4 per cent. levied upon the salary gives the right to a pension after twenty years' service. In the Credit Lyonnais women are also employed. For their entrance there the rules are not yet fixed. A cashier receives the salary of 2,000 to 2,500 a year, and a clerk from 3 to 5 francs a day. In the Post, Telegraph, Telephone and Postal Savings Bank Departments women are employed as follows: 1. As aids in offices of secondary importance. 2. As employees at the telegraph and telephone offices in Paris and important towns. 3. As clerks in the savings bank and book-keeping departments of Paris. 4. As receivers. The personnel is recruited from the auxiliaries, who must be 16 years of age and free from any weakness which would prevent their being employed in any branch of the service. These aides are under the direction of the receivers, and rise by examinations. Postulants must prove that they have lived honorably in company with persons of their own families. Age for entrance, 18 to 25. The relatives of employees have the right to come up first for examination. The value of the appointments varies from 800 to 1,800 francs a year, rising at the rate of 100 francs at a time. Posts in the savings bank are reserved as far as may be for the wives, daughters, daughters-in-law, and sisters of public servants and officers of the army and navy. There is no European country in which women clerks are more employed than in France. Indeed, it is rare to enter a French shop and find a man serving as accountant. Book-keepers are paid from 1,000 to 3,000 francs a year, and accountants much the same. In the commercial houses, where women clerks are also employed, they often have an interest in the business. In trades, properly so called, the apprenticeship is regulated by contract, and in most cases French nationality is indispensable. The limit of hours of work for women is fixed by law at eleven daily after 18 and at ten for children under 13. There are seventeen institutions in Paris alone for the teaching of different trades. Those that are dangerous to health are forbidden to young children. The term of apprenticeship naturally varies according to the nature of the employment. Some trades are very intermittent in their times of work. Thus basters do not work during January and April, and are paid about 35 centimes an hour. In embroidery no work is done in June, July, and August; if skilful, the workers are often paid at rates varying from 3 to 25 francs a day. Embroidery in silk and wool is especially well paid. The making of soldiers' linen is remunerated at the rate of from 30, 40 to 45 centimes an hour. Corset-makers for nine hours' good work receive an average of 4 francs a day. Dress-making is very well paid, and so is the sewing of furs and the making of costumes for theatres. Ready-made clothes for export can generally be worked at home, and sometimes mantuamakers and ready-made dress-makers can also take their work to their own abodes. The aspirant for employment in the mantua-maker's trade must learn the art of trying on, and, if possible, must know one foreign language. For these the salary is from 2 to 4 francs a day. In this trade it appears that there is no intermission all the year round. Plain white sewing is not well paid, owing to the competition of the large warehouses; but articles of *haute nouveaute*, on the other hand, are often remunerated at the rates of 20, 30 and 60 francs per garment. In men's cravat-making there is also excellent steady work, as well as in lace-making and glove-making. The trimming of bonnets, the making of bows for shoes, umbrellas and parasols, is intermittent, and so is the making of trimming of all kinds, this being dependent upon fashion. A woman can earn a decent livelihood by going out as a mender to those who have not time or capacity to do their own household work. Restoration of embroideries and tapestries is sometimes paid as much as 4 francs a day, but this work is of course very uncertain. In plaiting and ruching no work is done in January and February. In tailoring women are paid according to the quality of their work. All work for children is well paid and steady, and this includes the dressing of dolls. Women also do mattress carding, which in France is generally done in the house. Laundresses are paid by the piece. Bread-carriers are paid from 18 to 22 francs a week, according to the quarter and the custom received, besides two pounds of bread per diem. Printers, stitchers and folders are paid from 1 to 3 francs a day. A fairly remunerated occupation is the coloring of playing-cards. As lithographers, chromo-lithographers, as fillers and markers of ink bottles, as compositors, as bookbinders, good workwomen can earn 5 francs a day. The *articles de Paris* are well paid, but change constantly, according to the fashion, and the work cannot be depended upon. The making of fireworks is subject to various accidents. Too many to mention are many other small industries for women, comprising the making of small balloons, flags, steel springs for stays, and buttons. The latter is an extensive and important branch. Fairly well paid, too, are barbers' and dress-makers' dummies, but they must, of course, be fairly good looking. Fan making, in all its branches, from the simple fan to the highly ornamented, is a most important branch of woman's work in Paris, and in the case of artistic painting is often very highly paid. Well paid, too, are the artificial flower makers, for in this profession much natural taste is required. Strangely enough some branches of this profession are unhealthy. For artificial flowers there is always a certain demand, but it fluctuates according to fashion. Some girls only make one species of flower. In all trades connected with food women are, of course, largely employed. In biscuit making they need to serve a somewhat arduous apprenticeship. The manufacture of shawls is very well paid, but is fatiguing. Taken as a whole, there are not so many men employed in factories in Paris as in some other French towns. Sorting rags is a very unhealthy occupation; in this women are much employed, and receive in payment 15 francs a week. Women are also employed in leather manufactories, preparing the leather which is afterwards pressed in machines. In the making of military equipments women work equally in shops and in their own homes. Several large firms have the monopoly of this work, which is chiefly done by means of the sewing machine. In the making of perfumery, too, women are much employed; this and soap-making needs but a very short apprenticeship. Tobacco employs 1,500 women out of 1,800 work-people. For this six months' apprenticeship is needed, and the lowest salary is 3.50 a day. Weavers of fine stuff for furniture receive 3 francs a day. The weaving of galloons for carriages and ribbons for decorations is done entirely by women. Among the artistic trades that of pottery in its various branches requires special aptitude and a long apprenticeship. It is sometimes very hurtful to the health. It is paid according to quality. To the class of artistic trades belongs the coloring of fashion plates, lithography, photography, and so forth. Religious pictures, cards for first communion, and other small religious publications, are extremely well paid, especially if the

designs are original, and the illumination carefully done. It is not a little amusing to read that the imitation of autographs is a profession that is well remunerated; one would rather have thought that it would lead its author to prison. The engraving of music is largely done by women. It is well paid, but requires expensive tools. Engraving on paper is now largely supplanted by photography. Painting on porcelain and coloring glasses are all taught at the professional schools. Under the head of trades connected with printing is ranged the immense amount of work given out by journalists and publishers. The paper industries, too, give employment to a large number of women. The immense amount of work done for export only is very striking, also the great number of fancy articles manufactured, such as cotillon favors, which all require more or less taste and skilled handiwork. All these employments are evenly and steadily paid, and are regulated in a sensible and considerate manner. The French habit of classification makes it possible for any one to choose from this bookful of useful trades and professions the one most suited to her natural aptitude. Altogether, it is not without reason that Paris claims to be in the front rank of civilization. There is no other country that has such a noble record of women's work to show.

HEAT.

THE SUN'S RADIATION OF HEAT IN SPACE.

Only comparatively in recent years has the true nature of heat been properly ascertained. It was in Newton's time believed to consist of a subtle fluid, named caloric, which was mutually exchanged between all bodies. Heat is now known to be a form of motion communicated to the ultimate particles of matter by means, it is thought, of an imponderable, invisible medium, of infinite tenuity and elasticity, called the luminiferous ether. This ether is supposed to fill all space and to permeate the interstices of the hardest and heaviest substances. The glowing sun is composed of infinitesimal molecules and atoms of matter, vibrating with inconceivable rapidity in the ether which pervades every portion of his mass. The vibrations produce waves which are radiated across the vast etheral expanse to our planet at the rate of 186,000 miles a second. The ether-waves, when they come in contact with matter, set up the internal molecular motion we know as heat, and their pulsations on the retina of the eye produce the impression we perceive as light. When we stand before a fire and feel its warmth, the heat is communicated to us instantaneously, by means of the ether which pervades the chemical particles of which the air is composed. That heat and light must be conveyed in some such way as I have mentioned is now universally admitted, but it is not a truth capable of positive demonstration. Also, with regard to the sources of the sun's heat, men of science are satisfied that it cannot be supported by combustion, or to any appreciable extent by the impact of meteors, but must be recruited by the gradual contraction of the gaseous portion of the mass; though the shrinkage would be too slow for direct observation. Astronomers have calculated that at the present rate of radiation the sun could not have lasted more than about 18,000,000 years, unless the heat has been supplied by some means unknown to science. On the other hand, geologists and biologists, to meet their conclusions, require a far longer time for the past duration of the system. The antecedent probability appears to be on the side of the longer period; and what I claim is that, so far as loss of heat by radiating heat forth is alone concerned, our luminary's past duration may have been far more protracted than the longest extent now demanded. We have every reason to believe that there is, practically, as complete an absence of heat in space, as we can perceive at night there is a derth of light. The fact that the farther we ascend above the earth's surface the colder becomes the temperature of the air, makes it quite certain that the void region beyond the earth's atmosphere must be cold to the last degree. Yet the sun is supposed to be constantly performing work equal to melting ice or raising water to an enormous temperature in his surrounding medium, namely, work equivalent to producing heat outside his mass in all directions. No doubt our luminary would impart the heat in question, if he were surrounded by the ice or water. It is admitted however, that the sun is environed by a medium that must for all intents and purposes be a void. Yet it is maintained, in effect, that radiating to empty space should exhaust his energy to the same extent as the emitting of heat to the above-named substances would do. The present estimates, then, of the sun's annual expenditure are based upon the assumption that he is pouring forth in all directions the enormous amount of heat I have indicated. This assumption appears to me wholly unwarrantable. Professor Clerk Maxwell, Balfour Stewart, and, I have no doubt, all the authorities, admit that there is a great difference in form between the energy of pure radiation, or radient energy, and that of absorbed heat. It appears to me that these energies must differ as much in value as they do in form. Pure radiation is merely the result of a certain definite work accomplished within the sun, by which its vast temperature is sustained; and his expenditure of heat is not at all influenced by the velocity or rapidity of the vibration of the ether-waves, which proceed outwards in all directions. Different, however, is the case of the communication by the sun of the heat which is absorbed. We gather from the mechanical equivalent of heat—as, for instance, the energy expended in melting a large quantity of ice—and from the law of the conservation of energy, that the radiation of a vast amount of absorbed heat should have a reflex exhausting effect upon the sun's supply of energy. There is not a shadow of proof, however—the evidence is all the other way—that pure radiation could have any reflex influence of the kind. The reason assigned for the belief that the sun and each of the stars is constantly pouring forth a never-ceasing stream of heat, appears to be based on Newton's law of cooling, to the effect that "the quantity of heat lost or gained by a body in a second is proportional to the difference between its temperature and that of the surrounding medium." Newton was a persistent upholder of the material theory of heat, a view now quite abandoned. Dulong and Petid have proved that the above law is not of general application; but assuming it to be practically valid, it refers to the fact only of the amount of loss or gain of heat in a second, varying proportionally with the temperature. On a clear, frosty night, when we behold the planets with the stars, many of them far larger and hotter than our sun, gleaming in space, a medium that we know must be everywhere colder than the coldest temperature we could experience, and we are told that the sun is perpetually giving out heat sufficient to boil per hour 700,000 millions of cubic inches of ice-cold water, our sensations supply no evidence at variance with the thesis I have been maintaining. In warm weather, on the other hand, when we are enjoying the sun's light, and reflect that even at a considerable distance from his surface the most solid rocks would be quickly reduced to ashes, it may seem at first hard to realize that our luminary could only expend that stupendous energy when there was the requisite matter to operate upon. I think the difficulty arises from our still half-unconsciously entertaining the material conception of heat, and that when we form a clear representation of the undulatory theory, the notion that the sun cannot radiate forth more heat than is absorbed, appears the more natural view of the case. It appears to me that argument might be piled on argument in support of the view here advocated, and I am not aware that a single plea can be urged in favor of the received theory. Equally against it seem both the *a priori* evidence from the supposed enormously long geological periods, as well as the *a posteriori* demonstration from the mechanical equivalent of heat and the analogy of terrestrial radiation. Also, that the sun should be constantly expending in all directions a vast amount of energy for no apparent purpose, would be repugnant to our notion of the general order of things; though, perhaps, our finite minds may not always be able to decipher perfection in the works of Nature.

W. GOFF.

FASHIONABLE SQUEAMISHNESS.—Miss Brunc (*who is very fastidious*).—"Kitty, will you do me a favor?"

Miss Blonn.—"*Will* I? ask it."

Miss Brunc.—"Let Peters bring me a chocolate éclair instead of this vanilla one. It doesn't match my gloves, you know."—*Pick-me-up.*

HAPPY THOUGHT.—One day, in 1830, when a working jeweller, Joseph Gillott, now the famous steel pen maker, accidentally split one of his fine steel tools, and being suddenly required to sign a receipt, not finding his quill pen at hand, he used the split tool as a ready substitute. This happy accident led to the idea of making pens of steel.

COPPERED IRON.—A process has been recently invented by which iron may be coppered by dipping it into melted copper, the surface of the iron being protected by a layer of melted cryolite and phosphatic acid. It has been found that if the article when immersed is connected with the negative pole of a battery the coppering is done more rapidly.

SUBSTITUTE FOR LEATHER.—A German inventor has devised a new material which is intended as a substitute for leather in many of its uses. This material consists of panels of wood with wire netting between, the whole being glued together under heavy pressure. The sheets thus made are said to be very tough and pliable, and suited for making trunks and other uses that require strength.

SMOKE SCREEN.—Through experiments made by English military authorities it has been found that whenever the atmosphere is laden with smoke or mist the power of an electric light is greatly diminished by crossing the beam of light by that of another at a certain angle. At the point of intersection the illuminated space is practically made a screen. It is proposed to utilize this knowledge, since the electric beam, can thus be made to serve as a screen, back of which tactical operations might be conducted in secret.

FREAKS' JUBILEE.—At the Registrar's office in South Shields, England, on April 26, a girl only 32 inches high was married to Professor Hedley, 6 feet 1 inch high. Humbert, the man without arms, gave the bride away, signing the certificate by holding the pen between his teeth. The bridesmaid was Miss Nina, the American giantess, who weighs 616 pounds. The best man was Captain Dallis, 7 feet 10 inches in height. General Metilone, 29 inches high, was one of the wedding party. All were connected with a travelling circus going through the country.

MODERN MAECENAS.—Francis Wilson is a great book lover, and a special student of Horace. It was Eugene Field's translations of Horace which made Wilson very desirous of meeting the poet, and an intimate friendship is the result. Now the actor is preparing to publish this spring, at his own expense, a little book containing all of Mr. Field's Horace translations. The edition will be limited to fifty copies and the plates will be destroyed. The Latin text will be given on the page opposite the English rendering. The printing will be done in colored inks, and the poems will have vignettes and tail-pieces, the latter drawn by Mr. Field. A life of Horace, written in a vein entirely new to biographies of that ancient poet, will also be contributed by Mr. Field to the volume.

A VALUABLE PUBLICATION.—The May *Arena*, which closes the third volume of this phenomenally brilliant and successful review, contains a remarkably fine picture of the Rev. Minot J. Savage, made from a recent photograph of the great liberal divine. In this issue Mr. Savage appears in a debate with Julian Hawthorne on the subject "Is Spiritualism Worth Investigating?" An admirable picture of Julian Hawthorne and one of Professor Abraham S. Isaacs are also features of the May *Arena*. Probably the four papers which will attract attention outside the Hawthorne-Savage debate in this issue are those by C. Wood Davis on "The Wheat Supply of Europe and America; Professor Emil Blum on "Russia of To-day;" E. P. Powell's critical study of the political life of Thomas Jefferson, and the editor's paper on "Is Socialism Desirable?"

MEN, BIRDS AND KITES.

THE POSSIBILITIES REGARDING THE NAVIGATION OF THE AIR.

We made editorial reference last week to Professor Langley's recent address before the National Academy of Sciences in reference to the possibility of aerial navigation. The subject, with such distinguished advocacy, is attracting extensive attention, for there are many serious thinkers, as Rene Bache declares in one of his entertaining Washington letters, who hope that mankind will some day secure domain in the element of birds, just as it has already done, thanks to the evolution of sub-marine boats and diving gear, in that of fishes. The distinguished scientist referred to expressed confidence that the contrivance of the future for aerial navigation would be on the kite principle. The air possesses elements of buoyancy which have not been recognized hitherto. There is no truth in the popular conception that a body heavier than the atmosphere cannot be suspended in that medium without motion. A kite of sticks and paper is much heavier than the fluid which it displaces, but it is sustained aloft. You can find an example much more striking, however, in the eagle, or the frigate-bird, which, though an animal of considerable weight, remains poised in the sky upon extended pinions motionless for hours together, so that a telescope may be trained on it. Thousands of feet above the earth, it is sustained without movement of a feather, though in a rarefied atmosphere. This is possible because the suspended fowl has a distinctive knowledge of the way in which to utilize the air-currents for its support. When man has learned how this can be done, he will be able to fly. The most advanced investigators in this subject eject the balloon and all other such lifting devices as impracticable; a gas lighter than air can never be safely confined within a receptacle that is not weighty, and the same objection applies to a vacuum. Ballooning to-day is about where it was when it was first invented, and in the nature of things it can never get much further. Aluminum is light, for a metal, but it is several times too heavy to be successfully utilized for such purposes. Pray what has become of those aluminum trains of cars that were to be run through the air from Chicago to New York six months ago, at sixty minutes the trip? There is a school of flying-machine inventors who may be designated as the "flappers," inasmuch as their idea is to sustain their contrivances by the flapping of bird-like wings. But they doubtless forgot that the best flyers among birds do not support themselves by flapping. On the contrary, they only resort to that performance when it is necessary for a start. The eagle, if launching himself from level ground, is obliged to take quite a run first, then flap his wings with a violent muscular effort which he could not keep up for long, and so gain a sufficient altitude to render it possible for him to strike along the plane of an air-current, which holds him up. Floating with librating pinions from one air-current to another, he is lifted, with an occasional broad sweep of his powerful wings, to the upper aerial regions, where he simply floats, opposing to each movement of the suspended ether the gentle force necessary to maintain him in his stationary position. These principles which the eagle applies for purposes of flight are perfectly understood in the theory of mechanics. It is only necessary to adopt them with suitable apparatus in order to give to human beings like powers. True, the bird is lighter in proportion to its size than is man; its bones are hollow and filled with warm air from the lungs. But the difference in this respect is not very material, and it may easily be compensated for by bigger wings. Power to flap them is not what is required, inasmuch as the start can be made from a height; what is wanted is the knowledge which inherited experience, vulgarly termed "instinct," has given the fowl as to how to adapt the angles of the wings to the air-currents. This is precisely what Professor Langley has been experimenting with. What he is attempting is to produce a machine adapted to floatation upon the air-currents, like a kite. You can find a very simple illustration of the principle he is working on in the trick done with playing-cards by the prestidigitator Herrmann, who throws them from the stage into the highest gallery of the biggest theatre in the United States, distributing them one after another among the "gods" of that select circle. How does he do it? Simply by skilfully utilizing the air-currents. The scrap of pasteboard is heavier than the atmosphere, but, judiciously projected, it mounts to a great height and distance with a very little force. It would stay up, too, even if thrown out doors, supposing that it possessed the intelligence necessary to accommodate its surface to the winds. What can be done in this way may be accomplished on a larger scale. Lest this proposition be disputed, it will be sufficient to refer to a flying-machine recently patented in Australia. It weighs altogether nineteen pounds, and its backbone is a long copper cylinder two inches in diameter, filled with compressed air. The compressed air supplies power for a small engine, weighing ten pounds, at the rear end of the cylinder, which works a fan propeller. To the backbone, on either side, is attached a great wing of light material, so that the whole apparatus resembles a big butterfly, with two fans for a tail. This contrivance has been made to fly horizontally 360 feet. Of course, it is only a beginning, but all the same, here is the nearest approach to the practicable flying-machine of the future thus far attained. With the help of a money bequest from a deceased enthusiast, Professor Langley has constructed recently a machine for producing an artificial wind, which he is able to vary in strength all the way from the gentlest zephyr to a storm of sixty miles' velocity. He has been experimenting with this for the purpose of finding out how air-currents act in supporting plane surfaces. One very astonishing discovery that he has made is that, the faster such a plane surface, like a flat plank, is projected edgewise through the air, the less power is required to propel it. Truly, what an astonishing fact is this! On land or in the water, the greater the speed the more the power required to produce it; but in the atmosphere the case is the very reverse, and the faster you go the less expenditure of force is requisite. Thus, a trans-continental line of aerial cars once established, a ticket for the lightning express would only cost a fraction of the price of passage by slow freight, so much less fuel being necessary, not to mention the saving in time and salaries to the company. In like manner Mr. Langley has demonstrated that, the faster the flight, the less is the sustaining power necessary. You can convince yourself very easily that this is so by the same simple experiment that he employed to illustrate the proposition. Take an ordinary shingle and drop it upon the ground. It will fall in a fraction of a second. Then take the same shingle and skim it horizontally through the air. Three or four seconds will perhaps elapse before it touches the ground. The more power you employ in throwing it, supposing that you do it fairly skilfully, the the more slowly it will sink. To a clam-shell the same proposition applies, as every small boy will tell you. And why is this thus? Simply because the shingle, or the clam-shell, well thrown, is upheld by the current of air, as a bird is in flight, and the swifter they go the more easily they are so sustained. This seems very surprising, but let us see if it is not readily accounted for. Did you ever skate over thin ice? If so, you did not stop long in one place, lest it break beneath you. You knew instinctively that the faster you went, and the more your weight was in this manner distributed, the less thickness of ice was needed to support you. If you were able to travel fast enough, the surface of still water would uphold you. Likewise that other fluid called air, if you could only achieve sufficient speed. Now you have the two important principles on which the flying of the future will be based. First, the bird idea must be applied to utilize the currents of air for support in that element. All flying-machines that dispensed with balloons have employed the bird as their model in more or less degree, but they have almost invariably embodied the mistaken notion that a bird relies for flight upon flapping. The models for such contrivances at the patent office here show this sufficiently well. Aeroplanes will represent the bird's wings in the air-ship of the time to come. Such, at all events, is the surmise, and the likelihood seems to be that a steam engine of small dimensions, though powerful, will supply the motive force. Secondly, the motive force required will be at least for the greatest speed, and so proportionately. Professor Langley's notion seems to be this, that such a contrivance as he conceives, elevated in the air, would have no trouble to uphold itself in motion, supposing that its engineer knew how to deflect its supporting wings. In this point there lies an important difficulty, inasmuch as the most intelligent human being has no knowledge whatever of the art which the birds have transmitted to their progeny for thousands and thousands of generations, ever since, as the scientists say, they were first evolved from reptiles in an ancient geological epoch. But the honorable secretary of the Smithsonian Institution is of the opinion that it is possible for human beings, with practice fortified by their superior intelligence, to learn how to use wings in this way, just as small boys acquire the art of walking upon stilts, although such members are altogether artificial. When this art has been acquired, man, hitherto untutored in the science of navigating space, will launch himself abroad and chase the fugacious meteorites on tireless motor-actuated pinions. Seriously, however, there does not seem to be any good reason wherefore such mechanical principles as these should not be successfully applied for navigating the air. At the beginning, the problem of steering and the weight of the motor present themselves, as the two most serious obstacles. Professor Langley has proposed to get over these preliminary difficulties by running the first flying-machine on a wire, such as is used for a certain kind of electric cars. In this case, however, the machine is to fly above, perhaps at a height of two hundred feet, with an attachment to the wire below that runs along the tops of telegraph-like poles. A motor at each end of the line will do the propelling. Thus here will be no engine to carry and the wire will do the steering. How did the birds learn to fly originally? To escape from their carnivorous enemies they developed wings and acquired the art of navigating the air through practice. Now that the true principle of flight has been discovered, it would seem possible to apply it to mechanics so as to secure for man, with sufficient experience, the same power. The muscles of the human being are not strong enough for the purpose, and so he must construct a chariot of some sort to carry him, with a machine on board to do the work. Attention was called only the other day by General Hazen to the tremendous revolution which the introduction of practical air-ships would work in the methods of offence and defence in war. Fortifications, on which it is suggested that Uncle Sam shall expend $20,000,000 as soon as possible, would be of little use against flying-machines that could drop dynamite and other explosives from aloft. Likewise ships of war, however heavily armored, would be at the mercy of hostile aerial navigators. In such a case batteries of a description altogether new would have to be devised for shooting vertically, and the general defending a position on terra-firma would be obliged to assail the winged foe with volleys of bombs directed upwards, as one would shoot ducks on the wing. Should such a state of affairs come to pass, it seems likely that the conflicts of the future between nations will have to be fought out in the air between squadrons of flying men-of-war. About that time, one would imagine, it would be considered that the period had arrived, so long looked for by military thinkers, when there could be no more fighting because it would be too vastly destructive. Having achieved the conquest of the waters, it is natural that

man should likewise desire the mastery of the air, and thus in all ages the human race has been ambitious to fly. The earliest attempt in this direction recorded by tradition is the mythical account Daedalus, who, having constructed the celebrated labyrinth for Minos, king of Crete, was so unfortunate as to offend that monarch, and, being imprisoned, escaped with the aid of wings made of feathers cemented with wax. Another ancient story is of Archytas, of Tarrentum, who constructed a wooden pigeon that had power to fly, "so nicely was it balanced by weight and put in motion by enclosed air." If there is any truth in the account, it seems probable that Archytas was a fakir and worked his bird with a string, as is done on the stage. The ancients, generally speaking, made no attempts in the direction of aeronautics, believing that the power of flight could only appertain to the most powerful gods. Four centuries ago an ingenious gentleman named Lauretus Laurus published a statement to the effect that swans' eggs filled with quicksilver, when exposed to the sun, would ascend in the air; but it is not recorded that the experiment was ever subjected satisfactorily to scientific test. In 1670 a Jesuit, Francis Lana, proposed to make four copper balls each twenty-five feet in diameter and only four one-thousandths of an inch in thickness, from which the air was to be exhausted. To these balls a basket was to be attached, with a mast and sail, and the calculation was that the contrivance would carry 1,200 pounds. Unfortunately, it was discovered that the excessive thinness of the copper spheres would cause them to be broken, when a vacuum was created inside of them, by the pressure of the atmosphere from without. Nevertheless, this suggestion approached more nearly to a practicable idea in aerostatics than any other offered up to the time of the invention of the balloon in 1783 by the brothers Montgolfier. So late as 1775 Joseph Galien, a Dominican friar and professor in philosophy, contended that it would be possible to collect the rarefied air of some lofty mountain-top and enclose it in a huge vessel a mile in diameter, which would carry fifty-four times as much weight as did Noah's ark. Funnily enough, nearly all the early theorists on this subject imagined that the atmosphere merely covered the earth like a shallow ocean, on which the aerial vessels they had in mind were intended to float, like ships in the sea, with their upper portions in the diffuse ether that lay above.

CARE OF CLOTHING.

SOME USEFUL HINTS ABOUT PROTECTION FROM MOTHS.

Among the manifold duties which demand the housekeeper's careful attention during the spring season few are more essential than the proper cleaning and putting away of winter clothing. The first step is to remove every article from closets, wardrobes, trunks or other receptacles where woolen clothing is to be stored. A closet should never have any paper on the walls or carpet on the floor. Every corner and crevice possible to reach should be scalded and then thoroughly wet with spirits of turpentine. Take out every movable shelf and not merely wash, but scald them, and clean every cleat on which they rest. If the walls are broken or cracked fill them with plaster of Paris moistened with cold water. If there are cracks in the floor and between the floor and the baseboard, fill them with putty and then paint the floor. Should the house be infested with the carpet moth, corrosive sublimate should be used. It is very poisonous, but no harm will come from using it in the following manner: Set an old covered stone crock in some safe place out of doors, and fill it with boiling water. Standing far enough away not to inhale any of the fumes as they rise, add one ounce of corrosive sublimate for each gallon of water, and cover closely. When this solution is cold, apply it freely to all the cracks in the floors or shelves and let it dry in. Remove every drawer and scald thoroughly the body of the furniture behind them, and wet every crack and crevice with benzine to which carbolic acid has been added in the proportion of one ounce of the latter to a gallon of the former. Clothes moths have a decided aversion to newspapers, and it is well to cover every shelf with them. Packing boxes or trunks should be lined with them inside, care being taken to paste them in tight. When ready to commence packing choose a sunny day; put every garment out on the clothesline, and after the pockets have been turned inside out and brushed and all whipped free of dust let them hang two or three hours in the sun. If any garment needs sponging do so with water to which spirits of turpentine have been added. Dress skirts will often wrinkle less if folded right side out, and, if possible, kept where it is not necessary to fold them crosswise. Nice dresses should be placed separately in newspapers, with a plentiful sprinkling of whole cloves among the folds, and the edges of the papers pasted so securely together that there is no opening for the entrance of a moth. The sleeves of bodices and all jackets of men's coats should be filled with newspaper, or, at least, a folded piece the size of the sleeve, and a dozen or more of cloves put inside of each pocket. Great care should be taken in folding men's garments not to wrinkle the shoulders of coats or the legs of trousers. Lay a coat out smooth; fold it at the shoulders and under each arm lengthwise; then bring the under arm folds together, by another fold at the centre of the back. Bring each sleeve down on the breast, and do not fold crosswise if possible to avoid it. If each garment is not done up separately in a newspaper after the manner described above for dress skirts, papers should be placed between them. Large bags, either of plain manilla or tar paper can be purchased at paper warerooms. These are of course much easier to use than newspapers, but tar paper is very disagreeable to many people, and garments that have been packed in it retain the odor for a long time. Neither do I consider it as sure a preventive against moths. Carpet moths delight in feasting on birds' wings and the like ornaments in millinery. Be sure they are thoroughly clean, then paste strips of paper over the joining of the bandbox and cover. Securely fasten muff or other pasteboard boxes in which garments are to be put away in the same manner. Fur garments should be put away as early in the season as they are discarded, and before the common moth miller is around. Top garments of seal fur are usually placed with a furrier for safe keeping. Heavy hangings should be spread out and brushed (not whipped) free of dust, and sponged in tepid water to which ox gall has been added in the proportion of one pint of the latter to a gallon of the former. Bed blankets should be carefully washed and dried, and cloves sprinkled plentifully among the folds when put away. Moths prefer garments filled with dust, and for this reason discarded ones should never be hoarded up to afford nests for them.

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

May.

MEAT.—Beef, lamb, mutton, ham, kidneys, liver, sausage, veal.

GAME AND POULTRY.—Brant, pigeon, chicken, duck, turkey, goose, snipe.

FISH.—Anchovy, bass, catfish, cod, eels, clams, flounder, halibut, herring, lobsters, mackerel, mussels, perch, porgie, rock-fish, salmon, shad, shrimp, turtle, trout, sturgeon, whiting, weak-fish.

VEGETABLES.—Artichokes, beans, carrots, garlic, lettuce, onions, parsley, parsnips, potatoes, shallots, spinach, turnips, watercress, radish, rhubarb, sea kale.

PRACTICAL RECIPES.

GREEN PEA SOUP.—Put in the soup kettle one pint or one can of peas, one and one-half pints of chicken or any white stock and half an onion, and cook them slowly for about twenty minutes. Remove the onion and mash the peas through a sieve; return to the fire and thicken with four teaspoonfuls of flour rubbed smooth in four teaspoonfuls of butter. Let the soup boil for two or three minutes, then add seasonings of salt and pepper and a cup of cream and a cup of milk. Boil up, pour into the tureen and serve.

LEFT-OVER CHICKEN.—Cut the cold chicken into neat little pieces, removing carefully all bones and gristle; sprinkle them freely with salt and pepper; put a tablespoonful of butter and one of flour into a frying-pan and stir until quite smooth, then add one-half a cup of hot water and boil for a moment, then add sufficient cream or rich milk to make it the consistency of thick cream, put in the pieces of chicken, cook for a few minutes and serve.

SMELTS WITH CHEESE.—Clean thoroughly six good sized smelts, and dry them on a towel. Put into a quart baking-tin a layer of grated bread crumbs, on top of which add a layer of sliced tomatoes (free from skins); cover with a light layer of crumbs and season with salt, pepper and a pat of butter. Now add the fish whole and strew over them a top layer of crumbs, add salt, pepper and a liberal allowance of butter; pour in on one side a small quantity of oyster broth to prevent burning on the bottom, and also to flavor the whole dish; bake twenty minutes.

BAKED TOMATOES AND OKRA.—Slice the okra very thin, and pare and slice the tomatoes; measure your vegetables and see that you have one pint of okra and a good half pint of tomatoes. Stew them together very slowly for a quarter of an hour, then add a tablespoonful of butter, pepper and salt; pour them into a baking dish, sprinkle with crumbs, put some bits of butter over the top and bake for one-half an hour.

BREAKFAST EGGS.—Break six eggs into a sauce pan and beat them up in it; add six tablespoonfuls grated cheese, a tablespoonful and one-half of butter, a little salt and cayenne pepper, stir well while cooking, and serve on a hot platter.

A BACK YARD FANTASY.

THE ELUSIVE PUSS NO LONGER TO BE A TARGET FOR BOOTJACKS.

The following description of a new kind of motor reveals as profound a degree of inventive genius in the writer who concocted the notion as he attempts to attribute to the alleged inventor. It comes professedly as a despatch from Stoughton, Wisconsin, and relates to a new application of cat power, and informs the wondering world that Prof. Richard de Long, the inventor of the new feline motor, is a tall, pale-faced man, with a three-story, bay window forehead overhanging a pair of deep-set, sky-blue eyes, set on each side of a large, thin, hooked nose. He is not a beauty; but he is a genius. His feline motor, which at present is creating such a sensation in scientific circles in Stoughton, is a marvellous machine, unique in appearance and wonderful in operation. It may be described as a curious combination of large and small fly-wheels, great balance-wheels, bright steel rods, and an almost innumerable number of coils of copper wire, all joined to a brightly-polished cylinder of brass, one end of which projects into a wire cage filled with ordinary cats. Its operation is very simple, but surprising in its results. A slight pull on a small nickel-plated lever

starts the machine. Then like lightning from out the end of the cylinder projecting into the cage there shoots a long steel arm and hand, grabbing one of the cats by the nape of the neck and yanking it into the cylinder, where it disappears with a yawl of more than feline terror. In a moment the fly-wheels, the great balance-wheels, and all the complicated machinery begins to move at first slowly, but soon with startling rapidity. At the proper moment, which is indicated by a small clock-like attachment, the operator pulls another lever, when from out of the other end of the cylinder, with hair and tail erect, scintillating eyes, and a caterwaul dislocating to one's spinal column, the cat is projected into a tub of cold water prepared for its reception. This operation, surprising as it may seem, extracts from the cat electricity equivalent to the power represented by ten horses, working for one hour, and this power can be stored in the cylinder until needed. As a cat can be run through the motor every three minutes, and all the accumulating electricity be stored, the power of the machine is practically limitless. The same cat can be used once every ten hours without in the least impairing its health and general usefulness. The Professor is jubilant over the success of his invention. He is satisfied that he has overcome every difficulty, and intends soon to put the machines upon the market. In speaking of the origin of the invention and the probable results of its use, he says: "I have long believed that the cat is nature's Leyden jar, charged with an enormous amount of electricity, but in such a manner as to require a peculiar process to extract it. This process it has been my good fortune to discover. The discovery will be of incalculable benefit to mankind. It will revolutionize the mechanical world and be felt in every department of life. By its means every family, no matter how poor, can have its home brilliantly lighted with electricity at a less cost than to have it poorly lighted with kero sene. By simply running the now practically useless house cat through the machine twice each day a sufficient amount of electricity can be engendered to illuminate brilliantly any medium-sized house. Think how advantageous it would be to large city. Take New York, for example. Carefully compiled statistics show that there are at present within the city limits about 9,998,347 cats. This represents very nearly 20,000,000 continuous horse power, or enough to light the entire city and furnish all the motive power needed to do its work. The feline motor will do away with steam. Ten years from now, I venture to say, there will not be a steam engine in active operation in the United States."

EUROPEAN ENTERTAINMENTS.

THE AMERICAN IDEA COMPARED WITH THAT OF FOREIGN COUNTRIES.

In a recent Paris letter Mrs. John Sherwood says that the American idea is that everbody is hungry. The foreign idea is, that nobody is. The happy medium would seem to be exactly between the two. "Let me give my friend, not too much, yet just enough." The principal thing which the French people do, is to give their guests music at any entertainment. Some one is asked to sing or play, and the guests are expected to be very quiet, and to be enraptured. It is often very stupid, and the guests would rather talk. But the inevitable woman, or male singer, shrieks in a high French soprano, or an equally sharp tenor, most metallic, most disagreeable, or some one inflicts a pianoforte solo, greatest of trials! A french hostess seats her guests in a row in chairs which she designates, and is very much offended if they move. She is unlike an American hostess, who is pleased if her guests move about. If the rooms are full of beautiful bric-a-brac, she (the French hostess) is offended if the guest leave her seat to go and look at the pretty things, but if the guest says, "Would you allow me to go and examine your pretty china," the French hostess seems to be propitiated, and allows her to do so. Therefore a reception, a tea, a call on a French hostess is apt to be very stiff. In Russia, tea is always served. The immortal Samovar is in requisition, and it is very grateful in that cold cliamate. At the parties "champagne *frappe*" flows freely, and delicious cold and hot dishes, fruits, ices and bonbons, are served all the evening. The Russians are very hospitable, and their dinners are now perhaps the best in Europe. Continental people never eat an American breakfast at 9 o'clock, therefore no one in visiting at a country place in Europe, or, indeed, in anybody's house, need appear before 12 o'clock. People take in their rooms a cup of coffee and a roll, which they call *cafe complet*, or they may prefer tea and oatmeal. They have but the morning for reading, literary work, shopping and sight-seeing. At 12 o'clock comes the *dejeuner a la fourchette*, which is a hearty meal, served in courses with red wine, instead of tea. This meal begins with eggs in a variety of forms, a stew of meat, with vegetables, cold meat, stewed pipens, spinach, mutton cutlets, fried potatoes, or trout from the lake, a broiled chicken, cheese, honey, salads, etc., all winding up with a cup of coffee.

A FRENCH DINNER.

After this meal one has the whole day for rest, recreation or work, as they please. Dinner is rarely later than half-past 6 or 7 in summer, on the Continent, as there is a desire to go to the Casino in the evening or to hear music in the park. The dinner in France is always a good one. A first-rate soup, a fish, fresh as a daisy, with a worthy sauce, a filet of beef, one entree, possibly bouchers a la reine, asparagus, green peas, always the inevitable chicken, with a salad, of which the traveller gets—oh! so tired; then ices, fruits, cheese, cakes and coffee, and the wine of the country, for unless on special occasions, French entertainers do not offer champagne, which is quite as expensive in France as it is in America. Americans would do well to copy French frugality. It is not inelegant, it is not inhospitable. It is simply good common sense. English entertaining is superb and faultless at a great house. At an English dinner, from the plainest to the highest, there is etiquette, manner, fine service and everything which there should be. The wit, the courtier, and the beauty, and the poet, aim at appearing well at dinner. "The pleasures of the table," says Savarin, "bring neither enchantment, ecstasy nor transports, but they gain in duration what they lose in intensity. The incline us favorably to all other pleasures, or console us for the loss of them." They console us for our lost illusion. At very few houses, however, even in England among the aristocracy, does one see so elegant a taste, and never anywhere the profusion of flowers in which Americans delight. Indeed, a French gentleman who was dining next to me at an American's table in Paris, told me that it pained him to see money thrown away on flowers. In England one sees very fine linen and beautiful old silver, china and glass; the table lighted with wax candles. Coffee is served immediately after dinner in the drawing-rooms. At a plain country dinner, plum pudding, a sweet omelet or a rich plum tart is served before the game. I imagine this is the remnant of some old fashion, but it prevails in Yorkshire. The dinner, except in a few houses, is rarely as good as the ordinary American dinner except in the matter of fish, which is uniformly very fine. The vegetables are few, and the "sweets" are very fine, generally consisting of a sour tart made of gooseberries. Fine strawberries and pines are, however, very common. All the men are in evening dress and the ladies *decollete* at an English dinner, even in the country places like Melton Mowbray, and as the exposure to cold is getting to be more noticed than formerly, very elegant tea gowns are now allowed. A white or pink satin tea gown, trimmed with sable and made high in the neck, is now often seen at dinner. Servants make the round of the tables in pairs, opening the various courses. People do not talk loud, nor do they gesticulate as Americans do. They eat quietly and speak in low tones. No personal subjects are ever discussed before the servants, of whom there are always a great number. People of very moderate means keep many servants. No hostess ever apologizes or notices any accidents or failures. If the omelette souffle is burned or drops she does not observe it. The servant appears and withdraws it, nor is anyone disturbed thereby. At luncheon, and in some houses, it is still considered proper for the man of the house to carve. At very quiet dinners, the lady helps the soup herself. This is often done on the Continent.

ENGLISH AFTERNOON TEA.

Afternoon tea is an institution in England, and is one of the most agreeable ways of entertaining. Tea is always on tap in England, and whether one joins the table of a famous hostess after the hunt, in a country house, or goes to the more stately afternoon tea of a duchess, it is always the same good tea, with hot toast and muffins, perhaps. In Scotland they give one hot scones and butter, which are very nice, at afternoon tea. The London crushes, the Queen's balls, the receptions at the Foreign Office, are all most enjoyable in these great, splendid houses, which we have not yet copied. A well-bred, well-introduced American lady has the highest position in the English social scale if she knows how to take it and keep it. She should not effuse to much, nor be too generous of titles; still less should she indulge in a too presumptuous boldness, which has of late speedily brought several American women into trouble. The rather perilous admiration of the Prince of Wales for some American beauties has led to this style, but it is advisable that even a very pretty and witty woman should hold herself in check in England. An American should, if she would succeed in English society, have herself presented by her minister. She has then the privilege of attending any subsequent drawing room and is eligible to invitations to court balls, concerts and garden parties. These favorite forms of entertaining are, perhaps, more agreeable to a newcomer than the dinner party, for, unless a person is very agreeable, the first dinner seems stiff. English people are very kind, very hospitable, but they resent anything like a too sudden intimacy. They resent "pushing" more than any people in the world. In no country has intellect, reading, cultivation and knowledge such a success as in England. If a lady, especially, can talk well, she is invited everywhere. But American guests should be worthy of this splendid English hospitality. The English regard a letter of introduction as a sacred institution, and an obligation which can not be disregarded. Invitations to dinner, tickets for any sort of a show, the carriage, the house, all is offered, and a three day's visit at a country house is worth a voyage across the Atlantic. Of course, there are people in England who are discourteous, who patronize, who by their pride of birth make themselves disagreeable. There are well-known English names which are synonyms for snobbery, but we must remember in extenuation, that we have some well-known American families who boast a patrician and hereditary claim to the worst manners in the universe. However, well-born bears are in the minority. It is almost a sure sign of base and ignoble blood to be badly mannered, but all rules have exceptions.

MAKE YOURSELF AT HOME.

If the American visitor treats his English host half as well as his host treats him, he may be assured that the *entente cordiale* will be perfect. An English hostess never gives her guest the idea that she is being "entertained." She throws open the library door, she mentions the lunch and dinner hour, she places horses and carriages at her disposal, she welcomes her on the tennis lawn, she shows her the flowers, but then she lets her alone. The American "high tea" with cold chicken, perhaps a hot dish of roast partridges, hot cakes, biscuits and sweet meats, eggs on toast, etc., has been introduced at 5 o'clock with favor in English

country houses of late. But it is not very much patronized. And while the gentlemen shoots, fishes, and boats, or rides, plays billiards or smokes, the lady should also show a similar tact in retiring to her room, to write letters; she should have the genius and *finesse* to get out of the way, not "hanging round" to be "amused" or entertained. She must not pluck a flower in the ornamental grounds without permission. In each one is a part of the mosaic in the well wrought picture. No one must ride a horse to fast, or too far; or join a party where one is not expected under the trees. Remember, however warmly you have been received, that you are not always wanted. At garden parties a very ample cold lunch is served at the buffet, claret cup, champagne cup, soda water, brandy, and shandy gaff, are placed at convenient places in the grounds. Servants are always ready to serve the guests and to carry off the supply glasses, so there is no confusion in the grounds. Maid servants serve the tea, which should be always hot, and pines, peaches, strawberries and cream, grapes and apricots abound. Campstools or stationary benches are placed about, and a band plays in the distance. The most stately garden parties are given at Lambeth Palace by the Archbishop. One was given by the Queen in her jubilee year, and those at Marlborough House, given by the genial prince and princess are very enjoyable. In fact, England is the land for the garden party, with its turf of velvet softness. The flowering trees, the splendid old oaks, the clipped box avenues, the arcades of blossoming rose vines, the "pleached alleys," and the old-fashioned Dutch gardens, make these parties charming. A garden party near Paris has also its attractions in these fine old houses in the Faubourg St. Germain.

ITALIAN FRUGALITY.

All Italian entertaining is most frugal. A little wine and water, a few cakes, or some very warm orange flower water, or *syrop*, are offered. What would an Italian prince say to an American entertainment, where hot and cold dishes, even a haunch of venison and a *filet de bœuf* with truffles, a cold salmon, dressed with apeca sauce, oysters in every form, salads of every description, boned and truffled turkey and chicken, pates of game, cold partridge and grouse, *patie de foie gras*, hot canvas back ducks, terrapin and game, ices, biscuits, creams, jellies and all the best clarets, champagnes, Johannisberger, and Sauterns, all poured forth as from the cornucopia of plenty. One American supper would feed all Italy for a week. One finds a grand exception to this frugality at the royal palace in Rome. King Humbert and Queen Marguerite are hospitable hosts, and their suppers rival the American. Indeed, they ought to be, for the ancient Romans are famous for suppers since the days of Lucullus. The Germans entertain simply with potato salads, sausages, cheese, beer, wild boar, head cheese, pickles, gooseflesh dried, all sorts of cakes, and if they give you a musicale, the music is good, or they give a very good French dinner with a French chef, but the emperor has issued an edict that there shall be no French printed menus. The French language is one tabooed at Berlin. The Germans are very hospitable, and food, such as it is, is abundant. Hot coffee is handed to a visitor instead of tea, and beer takes the place of all other refreshments. In Spain, one must not expect to be fed, or to be asked to dinner. There is nothing of that kind of entertaining at Madrid or Saville or at Barcelona. The old Moorish idea of the seclusion of women seems to prevail so far as to interrupt any tea givings. The richest man in Madrid has no dining room. He gives five balls a winter and then shuts his doors. In Seville the ladies hold a fair in the open air after Easter, where you are expected to pay your respects to them in a tent, but in their own beautiful houses, with their *patios*, they never receive at breakfast nor dinner, nor do they, it is said, dress until the afternoon, when they drive. Spain is not given to hospitable entertaining. They are simply polite, with offers of opera box and carriage, but they do not ask you to dinner or tea. Indeed, when they eat, or what, is a mystery.

RUST.

IS IT TO BE WATCHED FOR BY THE CHEMIST OR THE ENGINEER?

At a recent meeting of the Association of Engineers in Leeds, England, a lecture on "Rust" was delivered by Professor Smithells. The lecturer said that if they were to do anything on the subject of rust, they must begin by studying the conditions under which rust was formed, getting to know as much as possible about the phenomenon itself. The question was, Was it the chemist or the engineer that was to tackle the problem? The answer in this case, as in so many others, was that the two must work together, they must combine theory and practice. His object would be mainly to take the chemist's attitude, and to explain to them the chemistry of rust, and to hint at one or two ways in which attempts had been made to obviate its formation. Rust, of course, was more or less a general phenomenon. It was not restricted to iron, but was most noticeable in the case of iron because iron was the most abundantly used metal, because the rust of iron formed rapidly, because it assumed a scaly character, because of its color, and because of the fact that rust was a thing that appeared to grow in the case of iron, and it did not grow so rapidly, if at all, in the case of other metals. Most metals, of course, did rust. They knew they could not expose the bright surface of copper or zinc without the surface becoming dim. These metals might, therefore, be said to rust in their respective ways, but the rusting was very slight as compared with iron, which was the most susceptible to rust. Iron rust was found to consist of three elements—iron, oxygen, and hydrogen. That rust did contain water could be shown by the simplest experiments. That rusts were oxides they could easily prove, because they could produce rust by burning metals in oxygen alone. Hence there could be no other element present; but the way that might appeal to them would be

Buffalo Lithia Water, Spring No. 2, in Bright's Disease, Gout, Stone in the Bladder, and Diseases Generally of Uric Acid Diathesis, Etc., Etc.

DR. WM. A. HAMMOND, of Washington, D. C., Surgeon General U. S. Army (retired), Professor of Diseases of the Mind and Nervous System in the University of New York, etc.

"I have for some time made use of the BUFFALO LITHIA WATER in cases of AFFECTIONS of the NERVOUS SYSTEM, complicated with BRIGHT'S DISEASE OF THE KIDNEYS or with a GOUTY DIATHESIS. *The results have been eminently satisfactory.* Lithia has for many years *been a favorite with me in like cases, but the* BUFFALO WATER CERTAINLY ACTS BETTER THAN ANY EXTEMPORANEOUS SOLUTION of THE LITHIA SALTS, and is, moreover, better borne by the stomach. I also often prescribe it in those cases of CEREBRAL HYPERÆMIA resulting from OVER MENTAL WORK—in which the condition called NERVOUS DYSPEPSIA exists—*and generally with* MARKED BENEFIT."

DR. WM. B. TOWLES, Professor of Anatomy and Materia Medica, in the Medical Department of the University of Virginia.

"BUFFALO LITHIA SPRINGS, No. 2, belongs to the ALKALINE or, *perhaps, to the* ALKALINE SALINE Class, *for it has proved far more efficacious in many diseased conditions than any of the simple* ALKALINE waters.

"*I feel no hesitancy whatever in saying that in* GOUT, RHEUMATIC GOUT, RHEUMATISM, STONE *in the* BLADDER, and in all diseases of URIC ACID DIATHESIS, *I know of no remedy at all comparable to it.*

"*Its effects are marked in causing a disappearance of* ALBUMEN *from the urine. In a* single case of BRIGHT'S DISEASE *of the* KIDNEYS, I witnessed *decided beneficial results from its use, and from its action in this case I should have great confidence in it as a remedy in certain stages of this disease.* In DYSPEPSIA, especially that form of it in which there *is an excessive production of* ACID *during the process of nutrition*, in some of the PECULIAR AFFECTIONS *of* WOMEN, notably in SUPPRESSION of the MENSES, and in CHRONIC MALARIAL POISONING, etc., I have found it highly efficacious."

DR. G. HALSTEAD BOYLAND, late Professor of Surgery, Baltimore Medical College, late Surgeon French Army (Decorated), Member Baltimore Academy of Medicine, Member of American Medical Association.

"In BRIGHT'S DISEASE of the KIDNEYS, ACUTE or CHRONIC, BUFFALO LITHIA WATER, Spring No. 2, is, in my experience, *without a rival*, whether in the PARENCHYMATOUS form or INTERSTITIAL NEPHRITIS. In cases in which the ALBUMEN in the URINE reached as high as 50 per cent., I have known it under a course of this water gradually diminish and finally disappear, at the same time other alarming symptoms were relieved and the sufferers restored to health.

"In STONE in the BLADDER of the RED LITHIC ACID and the WHITE PHOSPHATIC DEPOSIT, the SOLVENT power of this water is *unmistakable.*"

Water in cases of one dozen half gallon bottles, $5.00 f. o. b. here.

THOS. F. COODE, Proprietor, BUFFALO LITHIA SPRINGS, VA.

by getting the metal back again from the rust, and the oxygen as well. The lecturer demonstrated this by experiments with iron rust. The experiment he had done, he remarked, was a very suggestive one, because in getting the iron back from the rust in that particular operation he had done what had to be done so often in the process of soldering. They knew that before they could unite two pieces of metal by solder they must use a flux. The reason was that the two metals might be covered with a thin film of rust, and the solder would not adhere to these two unclean surfaces. What was the cause of iron rust? They all knew that rusting was favored by the presence of the air, and by the presence of moisture, but they wanted to know which of these two was the active agent, whether both were necessary, and whether anything else took part in the process. They wanted to know why rusting went on so rapidly and at different points, and how it was affected by the different composition and qualities of the metal, and by impurities in the metal, in the air, or in the water. Professor Smithells then showed some specimens of iron in jars, which he had been preparing for some time. One was a piece of iron in dry oxygen, and he explained that that would not cause the iron to rust. Next he showed a piece of iron which had been sealed up in water for some days, remarking that it was found that when they excluded air and other gases from the water no action took place, and a second conclusion was that water alone would not affect iron. The next question was—would air and water together affect iron? That experiment had been tried, and it had been shown that, wherever action had taken place at all, the action had been exceedingly insignificant, and the question arose—what was it that was absent and that caused the rust? The one ingredient which was present in one of the jars, and was not present in the cases he had shown, was carbonic acid gas. Carbonic acid gas existed in the atmosphere to a small extent, and it was this gas in the air that was all important in the operation of rusting. Pure air, pure water, pure carbonic acid, would not act singly upon iron; pure water and pure air would not act together upon iron, carbonic acid and air would not act upon iron, but when they had carbonic acid, water, and air together, they got rust. It was carbonic acid that really set up the rust action, and when it was formed, the carbonic acid was liberated and attacked the layers beneath. That was why rust had got the property of traveling inward. How could they prevent this action of rusting? There were many things which had been tried. They might paint the iron, and if they observed certain precautions, they might have an effective method.

One precaution was that the metal must be perfectly clean. A spot of rust embedded below a coat of paint would often break out of itself. Then there was the method of covering the iron with oils and tarry matters. There was also the process of galvanizing iron, the process of enameling, which was very useful for small articles, but the enamel was apt to chip off, and there was the Bower-Bariff process, which was worked at Keighley, and which was an admirable process. Alluding to boilers, he said that by putting soda into them not only did they correct acidity of the water, but they introduced something which would absorb the carbonic acid gas, and prevent it acting in a rusting capacity.



As your grocer for

The Cleveland Cook Book,

(free), containing over 350 proved receipts. If he does not have it, send stamp and address to the Cleveland Baking Powder Co., 81 Fulton Street, New York, and a copy will be mailed you.
Please mention this paper.

25 CTS. PISO'S CURE FOR CURES WHERE ALL ELSE FAILS. Best Cough Syrup. Tastes good. Use in time. Sold by druggists. CONSUMPTION 25 CTS.

Fine Table Wines

From our Celebrated Orleans Vineyard.

Producers of the

ECLIPSE

CHAMPAGNE,

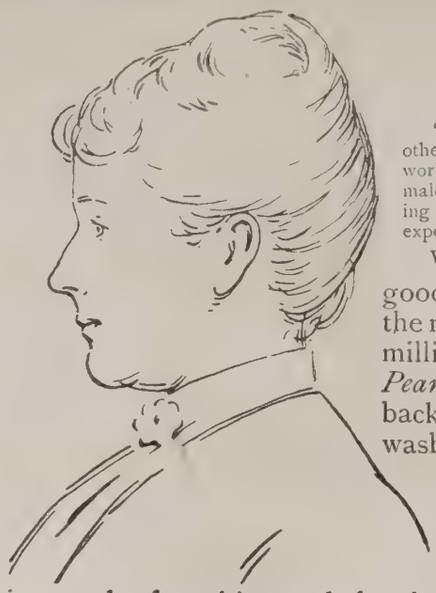
530 Washington St.

SAN FRANCISCO.

Arpad Haraszthy & Co.

GENERAL AGENCIES:

NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOSEPH R. PEEBLES' SONS CO., 73 West Fourth Street.
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.



Girls.

BY HELEN EKIN STARRETT, IN *The Forum.*

"Thousands who are now in shops and other organized industries would really prefer work in homes, if only the heavy, grimy, malodorous, *clothes-destroying* work of cooking and laundering were not required and expected of them."

Well—if this is true there's a good time coming for girls and the mistress too; for women (by millions) are coming to know, that *Pearline* saves the clothes on your back as well as the clothes in the wash; the paint on your walls—the sheen of silver—the lustre of glass and reduces the labor—drudgery—health breaking—temper and comfort wearing work of washing and cleaning to almost nothing.

Besides—the girl—the mistress—or both—are better satisfied with the results. It cleanses—restores original colors—but hurts nothing, not even delicate skin—luxurious for bathing—be among the bright ones and use *Pearline.*

Beware Peddlers and some unscrupulous grocers will tell you, "this is as good as" or "the same as Pearline." IT'S FALSE—Pearline is never peddled, and if your grocer sends you something in place of Pearline, do the honest thing—*send it back.* 192 JAMES PYLE, New York.

THE SECRET OF BEAUTY.

An ominous feature of modern society is the extensive use of dangerous drugs and chemicals for the purpose of augmenting personal beauty. The practice has been studied thoroughly by more than a hundred Boards of Health in the United States, and in almost every instance has been denounced in the bitterest terms. Objectionable goods are sold everywhere in large quantities and in many cases have brought fortunes to their manufacturers. The desire to be pleasing in appearance, upon which this nefarious traffic is based is natural and praiseworthy. It expresses unconsciously a great physiological principle, that beauty means health and ugliness disease. A man or woman in perfect physical condition is always invariably delightful to look upon. It is the same physiologic principle which teaches that to acquire beauty, we must first obtain health, not mere freedom from positive illness, but real, complete health in every regard. This is acquired more easily than is commonly supposed, and consists in expelling from the organization the humors which underlie and cause all disease, and which change beauty into that which is repugnant to the eye. Humors or impurities affect the system in many ways. They are deposited by the blood-vessels in the tissues of the skin and by degrees change the rose-pink hue to a gray or brown. They settle in and around the minute orifices and cause the pores to enlarge, and the cuticle about their ends to roughen up. They change the fine oil of the epidermis into a solid whitish grease, and by inducing local inflammation produce pimples, cat-boils, pustules, boils and even carbuncles and ulcers. They act in an inflammatory way upon the inactive tissues and by degrees the nose turns red, the surface around the nostrils becomes sore and the chin suffers from an eruption. The orbit of the eye darkens and becomes discolored and the eye itself loses its color and brilliancy. The eyelids swell and produce styes and the skin of the forehead grows thick and harsh. All of this results from the slow action of the impurities which accumulate in the blood. It is unfortunately so common as to escape remark except it be, "that person is out of sorts. He needs a dose of medicine." What is really needed is a blood-purifier. Something that will attack the humors, break them

HOSMER, CRAMPTON & HAMMOND,

NO. 43 COMMERCIAL STREET,

BOSTON.

COMMISSION MERCHANTS,

HAY, STRAW, FLOUR & GRAIN.

E. B. HOSMER, G. W. CRAMPTON, BENJAMIN HAMMOND, A. L. ROBINSON.

BOSTON HAY AND STRAW MARKET.

Hay, choice to fancy, in large bales	$15.00 to $15.50
Hay, choice to fancy, perpetual pressed bales	14.00 to 15.00
Hay, fair to good	13.00 to 14.00
Hay, poor to ordinary	11.00 to 12.00
Hay, Clover and Clover mixed	10.00 to 12.00
Hay, swale	8.50 to 9.00
Straw, Rye, good to prime	17.50 to 18.00
Straw, Oat	8.00 to

BOSTON, May 23, 1891.

Receipts for the week are 197 cars of Hay and 8 cars of Straw; corresponding week last year, 215 cars of Hay and 21 cars of Straw. There is little change in the general condition of the market from those noted a week ago. The receipts have continued small and the market is well cleaned up and firm; some strictly fancy cars of hay in large bales, selling as high as $16. We still believe it worth a special effort to get shipments in now while the market is strong and before the usual heavy receipts in June and July. Rye straw is steady with some choice cars selling at $18.50.

H. F. WILSON,

WIRE BALE TIES,

458 WEST 38th STREET, New York.



down and drive them out of the system. This is best done by Ayer's Sarsaparilla, a superb scientific combination of vegetable remedials, the best preparation known to modern medicine for accomplishing the work desired. It purifies the blood and at the same time tones up all the vital organs. As the humors disappear, the skin becomes thin, soft and smooth, the eyes resume their brightness, the eruptions and other facial disfigurements vanish, and in a short time the face that before was plain or disagreeable, becomes healthy and attractive. There is only one secret of beauty and that is perfect health, and the most effective way to secure perfect health is by using Ayer's Sarsaparilla.

BUSINESS NOTES.

HORSFORD'S ACID PHOSPHATE.

A nerve-food and tonic. The most effective yet discovered. Dr. J. E. Lockridge, Indianapolis, Ind., says: "From my experience, I would say that as a nerve-restorer in exhaustion from any cause, and as a sleep inducer, it is of the greatest value."

Subscription $1.00 per year. Now is the time to subscribe.

THE ORIGINAL AND GENUINE
(WORCESTERSHIRE SAUCE).



LEA & PERRINS' SAUCE

In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—

Lea & Perrins

Beware of Imitations; see that you get Lea & Perrins'

For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS, NEW YORK.

Tabasco Pepper Sauce

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced, by connoisseurs, to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

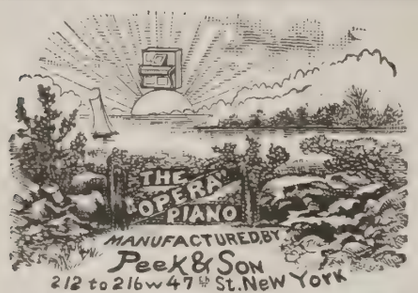
Manufactured by E. McILHENNY,

NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

HARTSHORN'S SELF-ACTING SHADE ROLLERS

NOTICE SCRIPT NAME OF Stewart Hartshorn ON LABEL, AND GET THE GENUINE HARTSHORN



A HIGH-GRADE PIANO

AT A VERY MODERATE PRICE.

NEW DESIGNS. FANCY WOODS.

Terms Easy. + Monthly Instalments.

TWO, THREE AND FOUR PEDALS.

Catalogues, Prices, Terms, Etc., sent to any address.

EVERY PIANO WARRANTED 5 YEARS.

(Mention this Paper.)

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,

HOWARD STREET, BOSTON, MASS.

GOLD MEDAL, PARIS 1878.



W. BAKER & Co.'s Breakfast Cocoa

from which the excess of oil has been removed,

Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

"BILLET"

are

Carefully Selected

French Sardines,

Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS.

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.

MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.

STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

BROMO SODA.

Useful in Nervous Headache, Sleeplessness, Excessive Study, Over Brainwork, Nervous Debility, Mania, Etc.

DOSE—A heaping teaspoonful in half a glass of water, to be repeated once after an interval of thirty minutes, if necessary. Each teaspoonful contains 30 grs. BROMIDE SODIUM and 1 gr. CAFFEIN,



SUPPLIED BY ALL DRUGGISTS

Ask for (Bromo-Soda, Warner & Co.) and take no other "Bromo."

RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,
184 Greenwich St., N. Y.

HAMMOND'S
CELEBRATED
Calumet Oleomargarine

Strictly pure, cheap and healthful.
Ask your grocer for it.
Put up in packages of all sizes, also prints and rolls.

C. H. HAMMOND CO.,
607 to 615 THE ROOKERY.
CHICAGO.

Also offices at Boston, South Omaha, Neb., and Hammond, Ind.

BLAIR'S PILLS.



Great English Remedy for GOUT, RHEUMATISM and KIDNEY COMPLAINTS.
SURE, PROMPT and EFFECTIVE.
Large Box, 34; Small, 14 Pills.
At all Druggists, and
224 WILLIAM STREET, NEW YORK.

Pure LAGER BEER,
"IMPERIAL" and "CULMBACHER"
Brewed & Bottled
SPECIALLY FOR
HOTELS, CLUBS
AND
PRIVATE FAMILIES
BY
Beadleston & Woerz
291 W. 10th St. New York.
Orders by Postal Card promptly attended to.

SWIFT'S
CHOICE
Chicago Dressed Beef
AND
MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,
UNION STOCK YARDS,
CHICAGO, ILLS.

ESTABLISHED IN LONDON, 1831.
DEAN'S
PATENT
Ardenter Mustard



W. G. DEAN & SON,
361 & 363 WASHINGTON STREET; 84, 86, & 88
NORTH MOORE STREET, N.Y.

We can save you Fifty Dollars when you Build. See



A complete set of Plans to build from, simply state about price of dwelling desired. 25 cts. in stamps. Our book "Beautiful Homes," 25 cts. Our monthly book "The National Builder," 25 cts. Address
The National Builder, Adams Exp. Bldg., Chicago, Ill.

DETECTIVE! WE WANT A MAN IN every **locality** to act as **Private Detective** under our instructions. Send stamp for particulars.
WASHINGTON DETECTIVE AGENCY,
Box 787. Washington, Iowa.

THE GREAT AMERICAN TEA COMPANY
LADIES
GET UP ORDERS.
Entire New Departure.
A HANDSOME PRESENT TO EVERY SUBSCRIBER.
THE GREATEST INDUCEMENTS EVER KNOWN TO INTRODUCE OUR NEW GOODS.

If you enjoy a cup of **Delicious Tea** send in your orders. 3½ lbs. Fine Tea by mail on receipt of $2 and this "ad". Beautiful premiums given away with $5 orders and upwards. The **most extraordinary bargains** ever offered, during the next thirty days. China Tea Sets and Lamps with $10, $15 and $20 orders to introduce our excellent **New Crop Teas.** Formosa and Amoy, Oolong, Congou, English Breakfast, Japan, Imperial, Young Hyson, Gunpowder, Sun Sun Chop and Mixed. Good mixed teas 20c. per lb. Headquarters in United States for Fine Teas. One pound of our tea will go farther than three pounds of trash. Thirty years' national reputation for selling **Pure Goods Only.**

THE GREAT AMERICAN TEA COMPANY,
P. O. BOX 289. 31 and 33 Vesey Street, New York.

We shall be glad to supply our readers with any periodical published at club rates.

Send us a postal naming periodical and we will quote you prices.

ANALYST PUBLISHING CO.,
19 Park Place, New York.

INSTRUCTIONS TO SUBSCRIBERS.

The **Names of all Subscribers** are registered as soon as received, and paper is always promptly forwarded.

Postage.—The postage to all parts of the United States and Canada is paid by the publisher.

Remittances of small sums may be made with comparative safety in ordinary letters. Sums of one dollar or more must be sent by registered letter or P. O. money order, otherwise we cannot be responsible for same. Silver must not be sent in a letter.

Postage Stamps will be received for the fractional part of a dollar, and in any amount when it is impossible for patrons to procure bills, but you must send one or two-cent stamps only.

SUBSCRIPTIONS.—The AMERICAN ANALYST will be sent one year to any subscriber for ONE DOLLAR. New subscriptions can begin at any time.

We Stop the Paper at the expiration of the time paid for unless a renewal of subscription is received. Those whose subscriptions have expired must not expect to continue to receive the paper unless they send the money to pay for it.

Change of Address.—Subscribers wishing their addresses changed must invariably give their former as well as new address.

Missing Numbers.—It occasionally happens that numbers of our paper sent to subscribers are lost or stolen in the mails. In case you do not receive any number when due, write us a postal card and we will cheerfully forward a duplicate of the missing number.

Most Important of All.—In every letter that you write us, never fail to give your full address, plainly written—name, post-office, County and State.

Address all letters to

THE ANALYST PUBLISHING CO.,
19 Park Place, New York.

GRAND PREMIUM OFFER!

A SET OF THE

WORKS OF CHARLES DICKENS,

In Twelve Large Volumes,

Which we Offer with a Year's Subscription to this Paper for a Trifle More than Our Regular Subscription Price.



CHARLES DICKENS.

Wishing to largely increase the circulation of this paper during the next six months, we have made arrangements with a New York publishing house whereby we are enabled to offer as a premium to our subscribers a **Set of the Works of Charles Dickens, in Twelve Large and Handsome Volumes,** with a year's subscription to this paper, for a trifle more than our regular subscription price. Our great offer to subscribers eclipses any ever heretofore made. Charles Dickens was the greatest novelist who ever lived. No author before or since his time has won the fame that he achieved, and his works are even more popular to-day than during his lifetime. They abound in wit, humor, pathos, masterly delineation of character, vivid descriptions of places and incidents, thrilling and skillfully wrought plots. Each book is intensely interesting. No home should be without a set of these great and remarkable works. Not to have read them is to be far behind the age in which we live. The set of Dickens' works which we offer as a premium to our subscribers is handsomely printed from entirely new plates, with new type. The twelve volumes contain the following world-famous works, each one of which is published *complete, unchanged, and absolutely unabridged:*

DAVID COPPERFIELD,
MARTIN CHUZZLEWIT,
NICHOLAS NICKELBY,
DOMBEY AND SON,
BLEAK HOUSE,
LITTLE DORRIT,
OUR MUTUAL FRIEND,
PICKWICK PAPERS,
BARNABY RUDGE AND CHRISTMAS STORIES,
OLIVER TWIST AND GREAT EXPECTATIONS,
THE OLD CURIOSITY SHOP AND THE UNCOMMERCIAL TRAVELER,
A TALE OF TWO CITIES, HARD TIMES AND THE MYSTERY OF EDWIN DROOD.

The above are without question the most famous novels that were ever written. For a quarter of a century they have been celebrated in every nook and corner of the civilized world. Yet there are thousands of homes in America not yet supplied with a set of Dickens, the usual high cost of the books preventing people in moderate circumstances from enjoying this luxury. But now, owing to the use of modern improved printing, folding and stitching machinery, the extremely low price of white paper, and the great competition in the book trade, we are enabled to offer to our subscribers and readers a set of Dickens' works at a price which all can afford to pay. Every home in the land may now be supplied with a set of the great author's works.

GLENN'S SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,

C. N. CRITTENTON,
115 FULTON STREET,
NEW YORK.

Be progressive and keep abreast of the times. Avoid dyspepsia by using **Lard Compound** and **Cottolene,** a substitute for lard.

The highest medical authorities pronounce them healthful; and expert cooks commend them.

Our **Clairette** brand of cotton oil soap is the purest and best laundry soap in the market; as pleasant to the hands as genuine castile.

N. K. FAIRBANK & CO.,
CHICAGO AND ST. LOUIS.

OUR GREAT OFFER
TO SUBSCRIBERS
TO THE
AMERICAN ANALYST.

We will send the **ENTIRE SET OF DICKENS' WORKS,** *in* **TWELVE VOLUMES,** *as here described, all postage prepaid by ourselves, also* **THE AMERICAN ANALYST** *for* **ONE YEAR,** *upon receipt of* **$1.50,** *which is only* **50** *cents more than the regular subscription price of this paper.* Our readers, therefore, practically get a set of Dickens' works in twelve volumes for only **50** cents. This is the grandest premium ever offered. Up to this time a set of Dickens' works has usually been $10.00 or more. Tell all your friends that they can get a set of Dickens' works in twelve volumes, with a year's subscription to **THE AMERICAN ANALYST** for only **$1.50.** Subscribe now and get this great premium. If your subscription has not yet expired, it will make no difference, for it will be extended one year from date of expiration. We will also give a set of Dickens', as above, free and post-paid, to any one sending us a club of three yearly subscribers.

ADDRESS:

THE ANALYST PUBLISHING CO.
No. 19 PARK PLACE,
NEW YORK.

EXPERIMENT STATION.
JUN 4 1891
ILLINOIS

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 23. NEW YORK, THURSDAY, JUNE 4, 1891. WHOLE No. 223

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - $1 per year.
Single Copies, - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.

Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.

Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,

H. LASSING, M. D., *Editors.*
T. P. McELRATH,

No. 19 Park Place. New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

Air 269
Aryan Art 267
Domestic Dietetics 269
Editorials 265
Women Printers ; Condensed Cream Again ; The Copyright Law.
Fashionable Jewels 270
Fish Farms 266
Food and Digestion 268
Liquid Fuel 270
Lung Gymnastics 269
Mascots and Talismen 270
Mental Effort 270
Progressive Repose 267
Subterranean Fires 271
Unselfishness 268

WOMEN PRINTERS.

A statement appeared in the *Sun* some time ago to the effect that women are physically unfit for the trade of type-setting, and moreover that since the introduction of the type-writer and the opening of other more agreeable and suitable lines of employment the female labor market has been relieved of the greater part of the women who formerly wished to be printers. It is estimated that there are not over three hundred women printers in New York, their work being principally in large book-publishing establishments where the hours are easy and there is no rush. A few others are employed in morning newspaper offices, working in the afternoons at distributing the type. We have heard it stated that these last mentioned operatives are not over twenty-five in number in the whole city. Their employment is described as pleasant and lucrative. They are employed during the day, at the same rate paid for night work, to distribute type for compositors who thus reduce their working hours. The "lady distributor" is comparatively a recent innovation. Her earnings depend upon the amount of work she receives, but will average about fifty cents for every hour employed. Some women thus earn twenty dollars per week, from about 10 A. M., until 5 P. M. These positions, are in the main greatly prized and eagerly sought after, notwithstanding that the printing trade, according to the *Sun* writer above mentioned is "too wearisome, too unhealthy and in other ways unsuited to women." Our earnest little contemporary, *The Nightingale*, whose song is always tuned in behalf of women's progress, takes up the editorial cudgel in support of the female printer. It concedes with some slight tinge of sarcasm, that the business of type setting as practiced by men is unquestionably unhealthful. "This is due partly it is said to the fact that lead and antimony enter into the composition of type metal. Lead poisoning is however, not at all common, although we do not deny that such cases may occur. The diseases from which compositors suffer would appear to be consumption or phthisis, and the effect of undue indulgence in alcohol and tobacco." To this must be added the injurious effect of working in overcrowded and poorly ventilated rooms, as is the case with the majority of composing rooms in this city." "But," says the *Nightingale*, "the *Sun* correspondent speaks of the unsuitability of this business for women, referring we suppose to the business as a whole. In the first place you cannot set type without blackening your hands, but neither can you black a stove, sweep a room or wash dishes without soiling your hands; and while a little kerosene oil added to the wash-water and a good nail brush will quickly remove printer's ink, the same cannot be said of the stains from some other trades. But the business requires, further, the lifting and moving of a galley-full of type and this, it is said women are not physically able to do. In answer it can be stated that a galley-full of type is not heavier than a scuttle full of coal or even a good sized pail-full of water, and yet no one objects to the employment of women for the lifting and carrying of these loads. In the second place any woman ought to be able to lift a galley of type. If she is not able to this she is not only unfit for this business, but also for a good many other lines of work open to women. It may be asked how a woman can lift and carry such burdens without injury. The woman who does not wear corsets, who has her skirts attached to a skeleton waist, and who has in addition the bands of these skirts reasonably loose can lift with impunity any thing which her hands and arms can carry. She will be made stronger instead of weaker by the exercise. It is lifting with a compressed waist which injures women. The reason is not difficult to understand." That is earnestly stated, and challenges approval, if it does not wholly enforce conviction. It is evident, however, that the fitness of women for working in printing offices, will not be established until the experiment is tried in an office employing none but female operatives. The two sexes apparently cannot work together without mutual disadvantage. For, the writer says, a little further on, "Women who work in the large offices with men are made the recipients of an amiable gallantry, they have their galleys moved for them and their measures set, and in some cases their proofs corrected. They are assured that these things are not a woman's work ; and the girls, flattered and assisted, have believed it. So it has come about that expert women compositors do not care to work in a woman's office where they must do these things for themselves just as the men do. They miss the gallantry and the help. They like their dependent position and do not want things any different." This sentimental phase of the question weakens our contemporary's position materially, and we dismiss the subject with the impression that in the present discussion at least, the men have the strongest argument on their side, as they likewise have the strongest muscles and evidently the strongest control of their emotional natures.

CONDENSED CREAM AGAIN.

In its April issue our young and enterprising contemporary, the *National Standard*, resorts to the following special plea on behalf of one of its advertisers :

By referring to the editorial page of this paper it will be noted that "food products only will be advertised, and only such articles of food as are well known to be of the highest grade and purest quality. We have also stated, editorially, in a recent number of this paper, that should any manufacturer obtain a place in our advertising columns through false representations, that we would treat such a party as we would any other imposter. Our attention was recently called to an article in one of our contemporaries, which reflected somewhat upon the character and quality of the condensed milk known as the Highland Brand of Evaporated Cream, manufactured by the Helvetia Milk Condensing Co., at Highland, Illinois. Whilst perfectly well satisfied at the start that this milk is a pure and wholesome article, in order to make assurances doubly sure, we purchased a tin of this milk in open market and sent it to our chemist for analysis. As the chemist to whom it was sent stands at the head of his profession, and as he did not know whose milk it was that was sent to him for analysis, nor did the manufacturer know the chemist in the matter, the result of this analysis cannot but be not only an intelligent but honest one. The result of this analysis shows beyond peradventure or doubt that the condensed milk known as the Highland Brand of Evaporated Cream is as pure and wholesome an article as is on the market. It contains no preservatives whatever, which means that there are no ingredients in its composition that is in the least ways injurious to health. On the contrary, it is a milk of the purest quality, and as such it is worthy of the consideration and attention of all those in search of a pure and wholesome condensed milk, whether it be for infants, invalids, or for those in perfect health. There are a great many people who cannot use the sweetened milk, and to these Helvetia Milk can be

unhesitatingly recommended. It is the only condensed milk, so far as we have ever come across, that can be used in cooking oysters. This alone is specially worthy of note. It is also a delightful beverage, easily prepared and as easily digested by the weakest stomach.

The article referred to in the foregoing quotation was published in the AMERICAN ANALYST of March 26, and for reasons that will be obvious is herewith reproduced in full:

There is a brand of something, that looks like condensed milk, sold in cans, which the manufacturers claim is condensed cream. To condense cream the same as milk is condensed is an utter impossibility, because of the excessive amount of fat contained in cream. Cow's milk contains, on an average, 3.86 per cent. of fat. The cream of cow's milk contains 35 per cent. Fresh condensed milk without sugar contains, on an average, about 15 per cent. of fat, while that preserved with sugar contains between 11 and 12 per cent. of fat. What we call fresh condensed milk, without the addition of sugar, is the kind of milk sold from wagons in the large cities, and will not keep any longer than ordinary uncondensed milk. If this kind of fresh condensed milk is put in cans and exposed to a high temperature, it is sterilized, and will keep until the can is opened and exposed to the air, when its keeping qualities are again reduced to those of ordinary milk. But in the sterilizing process the fat globules in the milk are broken up, and thus the entire character of the milk is destroyed. While fresh condensed milk is certainly superior to and richer than the best ordinary milk for use in coffee, it is only a substitute for cream and not cream. It is therefore clear that any manufacturer who puts up fresh condensed milk exposes it to a process which takes from it all the characteristics of milk and sells it for cream, and at the price cream is selling to the innocent purchaser a different article from what it is, and perpetrates a gross fraud. We have been informed that the Pullman and Wagner palace dining cars use this stuff as condensed cream. They may learn from this article what its true nature is, and thus be enabled to save themselves from paying an inequitable price for an inferior article and imposing on their patrons.

Our contemporary, it will be noticed, admits, though unintentionally, of course, that the criticism we made upon the compound under discussion was correct and just, by calling the article which is advertised and sold as condensed "cream," condensed "milk." The chemist to whom the tin of "milk" was sent, naturally found it to be condensed, unsugared milk, but evidently did not certify that it was condensed cream. He found it pure and wholesome. We did not say that it was adulterated or unwholesome. He does not say that our assertion that by the sterilizing process to which this so-called condensed cream had been subjected, the fat globules were broken up and the entire character of the milk destroyed was not so found by him. Practically the chemist employed by our contemporary found the milk just what we said it was, and had he been asked whether our article was correct he would undoubtedly have said it was. In these circumstances, we would suggest that the *National Standard*, in order to be consistent, should change its head-lines and lower its standard.

THE COPYRIGHT LAW.

The effect upon the cost of books, which is the popular and practical side of the question, to be looked for from the new Copyright law is ably discussed by a writer in the *Forum* for this month. Summed up in brief his argument is that it is to be expected that under the new law our first editions will generally cost more than now, but will be enough better made to be worth the difference, and that our own authors will sell more of them, and at a larger royalty. But it is also to be expected that in the case of books that "the people want," these first editions will be succeeded by cheaper ones—just as cheap as the people will provide a wide market for. These will be in addition to the books whose first editions were issued long ago, but for which a wide demand is still possible; for them, publishers will be encouraged to cultivate this demand by cheap durable editions, when they have no longer to contend against the opposition of the poor material on which our people have been principally "educated" (outside of school) for half a generation. Averaging all sorts of books the gain will be very great, for it is not so important to have the new book cheap, even if that did not involve underpaying the author, as it is to have cheap the book that has stood the test of time, or at least that of contemporary opinion.

FISH FARMS.

PROSPECTIVE CULTURE OF THE LAKES AND OCEANS.

Within a century from the present date the waters of this country will supply as much food as the land produces. So the authorities in the Fish Commission and geological survey assert. By that time water farms will have become as plentiful as land farms, and the aqueous acres will be cultivated with as much attention as the terrestrial. Water-farming is, in fact, to be the great industry of the future. It is far more profitable, even now, for a given area than the tilling of the most fertile soil. A fruitful acre of earth will support one young bullock, increasing the weight of the beast five hundred pounds in a twelvemonth. One acre of water, properly located, will produce 10,000 pounds of oyster meat, shells and juice not included, in the some length of time. Oysters are, weight for weight, very nearly equal to beef for making flesh and blood. By artificial propagation, as it is now beginning to be carried on, the entire bottom surface of all streams near the sea, and estuaries also, can be made to yield crops in this proportion. But great as will be the business of raising oysters on our coasts a century from now, it will bear but small comparison with the cultivation of fish. This will be carried on in three branches. The most important will be their propagation for market in the waters of the interior, which will afford opportunities hitherto undreamed of for economic fish-farming. It is not generally realized that there are in this country literally millions upon millions of lakes available for this purpose, in size all the way from mere ponds to the great inland seas of fresh water. In Illinois alone there are tens of thousands of lakes, and hundreds of thousands more can be readily created. There are in that State hundreds of thousands of extinct lakes which can easily be transformed into sheets of water by the simplest means All the enormous "Lake Plain," as it is known to geologists, comprising Wisconsin, Minnesota and Michigan, north of the Ohio River, is dotted with countless sheets of water, conditions being abundant for creating a million more by such inexpensive arifices as the damming of streams. By damming at intervals, every creek and rivulet can be made to form artificial lakes. Everywhere in the United States it is pretty much the same, and every acre of this water can be made to produce several times as much food as can be obtained from the most fertile acre of land. Even the vast arid region—the "Great Desert" of the West—is speckled all over with multitudes of extinct lakes, which can be filled once more and made to teem again with fish life, as they once did. In the marshes, where once these dead ponds were, countless shells and fish-fossils are found to-day. From such sources were obtained the remains of mastodons preserved in the museums, the mighty beast having got mired when they went for water and so perished, leaving their bones behind them to excite the wonder of a later age. When the irrigation of the arid belt has become an accomplished fact, the water stored in reservoirs will produce as much value in the shape of fishes as from the land in the form of vegetables. All these millions of water farms, as they are some day destined to be, will be planted with fishes native to the Mississippi Valley—such as the crappie, black bass, rock bass and pickerel—as well as with land-locked salmon, carp and other suitable species, palatable and quickly multiplying. This Mississippi Valley itself, by the way, with its multitudinous bayous, will afford extensive and most profitable areas for the propagation of scaly food. In short, all the fresh water is at hand that can possibly be wanted for the growing of fish in any quantity that may be desired. One principle at the bottom of the fact that water farming makes bigger gains than land farming is that, whereas a pound of beef must carry its own weight, as it were, the animal wasting most of what it eats in the muscular effort of walking about, the fish is suspended without effort in its native element, having merely to waggle its fins occasionally in order to achieve what locomotion is necessary, so that nearly all of its food goes to support and increase the bulk of its body, at so much per sixteen ounces, market price. The second great branch of the water-farming industry of the future will be the cultivation of the coastal waters of the Atlantic and Pacific oceans, as well as the Gulf of Mexico. It is as easy to stock those waters as to do the like for the ponds and lakes, and operations for propagating purposes can be carried on with equal certainty of success. The migrations of the cod are as limited and well-defined as those of the shad. Cod do not go far from shore, merely retreating into deep water in summer and coming back to the spawning grounds to breed in winter. The area of their range is always a definite one, and propagation can be carried on inside of that area with perfect confidence in sure results. Within the last half-dozen years the Fish Commission has remade the great cod-fishery off the New England coast. During the month of January last it took for hatching two hundred and fifty million cod eggs. Out of this number about one-half will be safely hatched and will grow to three inches in length, when they will be carried in tanks upon steam launches to the fishing grounds and dumped overboard to shift for themselves. It is estimated, well within the mark, that of these 125,000,000, fifty millions will escape the maws of bigger fishes and other perils of infancy and grow to be adults. Suppose that these fifty millions averages ten pounds apiece, though they ought to average twenty pounds, and cod often reach eighty pounds, and that they are worth only three cents a pound, that makes fifteen millions of dollars' worth of cod created by one season's hatching, with small expenditure and comparatively little labor. By a not very costly expansion of the work the schools of cod on the shores of New England could undoubtedly be multiplied in numbers by ten. The only limit to such multiplication is the amount of food available in the sea for the fish, and there is plenty of that and to spare. Each female cod lays hundreds of thousands of eggs at a spawn, but owing to natural causes, nearly all of them are lost. They float on the surface of the water and furnish food for every fish that swims. Depending as they do for being rendered fertile upon accidental contact with the floating milt of the male, most of them remain unimpregnated, and every breaker casts upon the rocky beaches by a northeast storm destroys them by myriads. But by the artificial method, the eggs and milt being stirred together in a pan of water, nearly all are hatched, and the little fishes are taken care of until they can look out fairly well for their own preservation. Speaking of the cod fisheries, Professor Huxley says—"The fishing grounds are much more prolific of food than the same extent of richest land. Once in a year an acre of good land, carefully tilled, produces a ton of corn, or two or three hundredweights of meat or cheese. The same area at the bottom of the sea in the best fishing-grounds yields a greater weight of food to the persevering fishermen every week in the year. In recent discussion of the question of reciprocity in trade between this country and the South American republics, no one seems to have thought about the cod, which in those countries is considered the greatest of all delicacies. When the treaties are signed this government cannot do better than appropriate a big sum of money for increasing the product of cod to its maximum, which could be accomplished within a few years by the Fish Commission. As quickly as these southern markets are opened by the removal of duties, there will be an

enormous new demand by a whole continent that is actually starving for codfish, hitherto purchasable for nothing under sixty cents a pound, and therefore forbiden to all save the well-to-do. What is being done for the cod is to be done also very soon for the mackerel, which is becoming very scarce and dear, the Spanish mackerel, the haddock and the halibut. Most difficulty is anticipated in propagating the last-named fish, for the reason that it lives in great depths, and, on account of the difference in pressure that it experiences when drawn to the surface, soon dies, so that it cannot be got to the shore alive for taking its spawn and milt. But this will probably be gotten over by taking the eggs and fertilizing them far out at sea, where the halibut are captured. On the Pacific coast lobsters are being planted by millions, in the shape of little fellows a couple of inches long, and they are thriving so well, though unknown on those shores hitherto, that as soon as they have had time for multiplying, they are likely to supply the whole country, including New England. In fact, it looks as if Bostonians of the future would have to draw upon Portland, Ore., for their lobsters. Conditions on the west shore of the country, it seems, are more favorable to lobster propagation than those of the east coast, owing chiefly to the more even temperature of the water. Though much has already been done for the shad, which has been multiplied many times over in eastern waters by artificial hatching and made one of the commonist of fishes in the streams of the Pacific coast, where until recently it was unknown, only a beginning has been made of what is destined to be accomplished in its propagation. One advantage which it possesses, in common with some other fishes, is that it feeds on the ocean bottoms, where the amount of provender is unlimited, and at spawning time fetches into the rivers for the use of man the crops of those bottoms, otherwise unaccessible, in the shape of toothsome flesh. The seas will support any number of shad, and in order to crowd the streams with them every year, it is merely necessary to hatch enough of the eggs and put the fry into the water. It is the same way with salmon. This propagating of such river-fishes is in fact the third branch of the water-farming of the future. New and improved methods and processes for multiplying the fish supply of every kind are constantly being discovered, with results that are really wonderful Thus far nothing has been said of the feeding of fish artificially, which, together with a copious water supply, may be said to constitute what is equivalent to so-called "intensive" farming on land. Given a flow of one hundred gallons of water per minute, and plenty of liver and scraps thrown in, and you can raise one thousand pounds of trout in a pond ten feet deep, ten feet long, and ten feet broad, replacing them with small ones as rapidly as they reach remarkable size. It can be done very profitably, too. The time is looked forward to, and it is not far away, when every farmer will look upon an acre of water as he does upon an acre of land, expecting so much yearly yield from it, whether it is pond, lake, river, or estuary.

ARYAN ART.

WHAT THE WORLD OWES TO THE ARTS OF PERSIA.

Mr. S. G. W. Benjamin, formerly United States Minister to the Court of Persia, says that we talk of what we owe to the arts of Greece and Rome, and of what they owed to Egypt. But how often do we ask or do they realize what they and we owe to the art-thought of Persia? The Persians, who call their country Irvan or Erau, from Arcia, whence our word Aryan, are first brought prominently before us in authentic history when Cyrus or Kur invaded Asia Minor, and came in contact with the Greeks while attacking their colonies on the eastern shores of the Ægean. But they were already an old people. Cyrus was merely one representative of a race abounding in heroes, a race which had for ages been working westward from Central Asia, and had at last reached a position where the forces developed demanded an outlet in foreign conquest. During several centuries of this prehistoric period Persia was alternately under the dominion of Babylonia or Chaldæa, and Assyria. That interval of subjection is one of the most interesting and valuable of any known in the history of the fine arts. The Greek writers tell us little or nothing of its wonderful results. But if we turn to the remains of Persian art we meet records which enable us to trace its development perhaps to its very beginning, and which also indicate one of the most important features of its influence to the present time. The Akkadians and Chaldæans of Babylonia, and the Assyrians, as we now know, had distinct art schools of their own. Before Cyrus's time the Persian æsthetic genius had been awakened by contact with the arts of those peoples, and when the Persians asserted their independence, presumably under Feridoon, a Persian art school sprang into existence. Though suggested by the art of their former masters, it yet bears the unmistakable stamp of a great intellectual race—an art perhaps the most remarkable yet seen in Asia for its power, but especially for its imperishable vitality. The Babylonian Ninevite arts came to a definite close nearly twenty-six hundred years ago. But Persia is still practicing the arts, and her types and ideas are still potent in directing the expression of thought in material forms of beauty in Western Asia and in Europe. The stately columns of Persepolis present, as far as we can now discern, a strictly original style, with their slender fluted shafts peculiar to Persian architecture up to the present time, and reproduced with the same general *motif* wherever we find Saracenic art or suggestions borrowed from it, whether at Ispahan, Constantinople, Cairo, Grenada, or in the Christian styles of Portugal and Spain. The general form of the bull-headed capital, the bull-head being omitted but the spreading outline preserved, is still followed in Persia, and undoubtedly had its influence on the capital of the Greek, Byzantine and Gothic orders. The recent explorations at Susa, the ancient Shushan, in south-western Persia, where the remains of three different palaces are superimposed, one above the other, representing, as it were, three stratified periods, offer conclusive evidence of the influence of the Babylonian and Assyrian arts on those of Persia. They present at the same time decisive evidence of one of the most congenial forms in which the Persian mind has preferred to express its artistic thought. What especially we discover at Susa is a form of Keramic painting, borrowed from that of Chaldæa, but surpassing it, an art which not only exhibits great technical skill but extraordinary ability in design. The procession of figures found there representing the Immortals, or royal guards, is hardly surpassed in the entire range of decorative art. The majesty of those forms, now brought after their sleep of ages in the mouldering earth to look again at the sun which their prototypes worshipped, prepares us to accept all that we read of the grandeur of Persia under Darius the Great. So late as the time of Shah Abbass, 1000 to 1630, pictorial plaques were made which rival the Keramic designs of Sufa, two thousand years earlier—an emphatic display of the persistence of a national instinct for a specific style of art expression. One of the most marked points in Keramic art was the invention of irridiscent glazes. This magnificent art was certainly discovered in Persia before the Mahommedan conquest. It became one of the most widely practiced arts of the Persians. Not only were vases thus made, but mural tiles for the decoration of mosques and shrines. There was a great variety of glazes, each irridescent like the elusive, mystic spark of the opal, or the shifting splendor of the dying dolphin, and yet each having a chromatic tone entirely its own. The secret of making this irridescent ware was lost in Persia about two centuries ago; but it is interesting to know that experiments for its revival are now being made in the United States, and have already given fair promise of success. The peculiar pendent decoration of vaults and niches, which has been carried to such an exquisite degree of elaboration in the Alhambra, is undoubtedly of ancient Persian origin, examples of it being still found in the ruins of Rhei. Another art which reached extraordinary excellence under the Sassanides, was the making of textile fabrics and embroideries of needlework. Printed calicoes have been manufactured there for ages. Block painting by hand was an original art in that country. The music of ancient Greece was borrowed from Persia. The spirit, the genius of Persian art yet pervades the intellectual atmosphere of the world. So long as her art influence is felt, she speaks to us a living language, and continues a civilizing power.

PROGRESSIVE REPOSE.

THE PHENOMENA OF SLEEPING AND WAKING.

Scientific investigators assert that in beginning to sleep the senses do not unitedly fall into a state of slumber, but drop off one after another. The sight ceases, in consequence of the protection of the eyelids, to receive impressions first, while all the other senses preserve their sensibility entire. The sense of taste is the next which looses its susceptibility to impression, and then the sense of smelling. The hearing is next in order, and last of all comes the sense of touch. Furthermore, the senses are thought to sleep with different degrees of profoundness. The sense of touch sleeps the most lightly and is the most easily awakened; the next easiest is the hearing; the next is the sight, and the taste and smelling awake last. Another remarkable circumstance deserves notice; certain muscles and parts of the body begin to sleep before others. Sleep commences at the extremities, beginning with the feet and legs and creeping toward the centre of nervous action. The necessity for keeping the feet warm and perfectly still as a preliminary of sleep is well known. From these explanations it will not appear surprising that, with one or more of the senses, and perhaps also one or more parts of the body, imperfectly asleep, there should be at the same time an imperfect kind of mental action, which produces the phenomena of dreaming.

ENTERPRISING WOMAN.—Mrs. Schliemann says she proposes to continue the excavations at Sissurlik, and that they will be carried out in conformity with Dr. Schliemann's plans under the direction of Dr. Dorlfield.

THE ABBOTT MEMORIAL.—A granite monument for Emma Abbott is being constructed at Quincy. It is to cost $85,000, and will be placed over the remains of the singer and her husband in the family lot at Gloucester.

THE DEADLY CIGARETTE.—If any one were discovered putting arsenic and phosporous in the cigars which men use, how soon a law would be found or made to fit his case. But when the same poisons are employed in preparing cigarette wrappers, with fatal results to two boys, there is no mention made of legal proceedings contemplated or begun. Anti-cigarette legislation is practically a failure, but there is no good reason why a law against poisoning tobacco should not be made a success.

MRS. LYNN LINTON WAILS.—There is no question that there is less modesty among women than there used to be. Modesty, indeed, is at a discount all through. From the callous *aplomb* of the platform orator to the suggestive undress of the fashionable woman we look in vain for that personal reserve which has hitherto been supposed to form part of the inventory of feminine graces. The modern studies, too, of women help in the destruction of that older reserve. Medical schools and the "life schools" in art may be of absorbing interest to the student, and of future emolument to the professor; but they kill something in the girl which is more valuable to the race than that such and such a Mary or Emma should understand all about diseases and their remedies, or how to draw the nude human figure with more or less accuracy.—*London Graphic.*

FOOD AND DIGESTION.

OPERATION OF FOODS AND MEDICINES UPON THE HUMAN GASTRIC JUICE.

An interesting paper on the above subject was published in a recent issue of the *Zeitschrift fur Klinische Medizine*, of which the subjoined is an abstract: The author, in making a series of experiments upon the influence of various articles of diet and medicine upon the gastric juice, first ascertained the ordinary amount of acid present in the stomach of the person experimented upon, and the time of its disappearance after Ewald's test meal, consisting of a roll weighing about an ounce and a quarter and ten ounces of water, and used the results as a standard for comparison. When certain quantities of alcohol were added in the shape of 50 per cent. cognac or Munich beer, the conclusion arrived at was that small quantities of alcohol, about 20 per cent., have a slight power of raising the HCl secreted, but in larger doses, 30 per cent. or over, they hinder the secretion and peptonization. Besides, the experiments show that, when regularly used, the stomach, after a time, fails to respond to its usual stimulus, the food; the required amount of stimulus becomes greater, the use of alcohol more frequent, the glandular function of the stomach becomes more and more affected, and the way is opened to the whole train of dyspeptic symptoms, ending at last in atrophy. Concerning the influence of coffee in infusion he can give no information, because the color of the beverage interferes with the reaction of color tests. He substituted, therefore, caffeine, which he administered in the form of powders along with rad. althæa. The result is that in doses of 20 cg., and still more in larger quantities, it has the property of lessening the total acidity at the height of indigestion; it also lessens the secretions of HCl, and delays peptonization. Since that amount of caffeine exists in the quantity of coffee taken usually by men, and more especially by women, we may assume that it has a similar action upon them. Nicotine was next experimented with, a certain quantity—one mg.—being introduced by the sound after a test meal. Only three patients were tested, and of these, in two cases, there was a very slight rise in the acidity; in the third, a slight rise also at first, but after several days' use a material lessening of the secretion and delay in peptonization. The experiments are admitted to be too few to draw safe conclusions from. Turning to the action of bitters on the secretion, Dr. Wolff refers to the experiments of Tschelzoff on animals, and Jaworski on men, which show that these drugs lessen the secretions of acid to such a degree that Jaworski attributes the commonly supposed beneficial employment of them in dyspepsia to their influence in lessening the acidity where hypersecretion exists. Wolff tested first the action of nitrate of strychnia in doses of 0.5–1.5 cg. The effect was found to be that where the acidity was below the normal, strychnia considerably raised it, but where HCl was habitually absent, the drug failed to call it forth. Infusion of cundurango seemed to have no (or very little) influence on the acidity, but a slight increase of the secretion of pepsin may be produced. Reichmann's experiments, a review of which was published in the *Chronicle*, gave nearly the same result. Bitter infusions poured into the fasting stomach produced less secretion than plain water, but when administered along with food the bitter quickly disappears, and the secretion is afterwards considerably increased; where, however, alkaline or neutral juice is ordinarily present, bitters are unable to provoke the secretion of HCl. Three persons were experimented on with 15 to 20 c. cm. of ox gall, administered along with a test meal. It was found that the acidity was thereby lessened, but there was no considerable diminution of the HCl or hindrance to peptonization. Administering 5 g. of common salt with the test meal of patients either with lessened or increased secretion of HCl invariably lessens the amount of HCl present, in cases of hyperacidity to one-half, with a corresponding improvement in the symptoms. The beneficial action of such waters as Wiesbaden and Kissingen must, therefore, be chiefly attributed to the lessening of the secretion of HCl, but their influence on absorption and the motor function of the stomach may be beneficial, and that on metabolism generally must not be neglected. The author cites, before making experiments of his own on the action of Carlsbad salts, the results of the latest experiments of Jaworski, that "small quantities of Carlsbad water or salt stimulate the secretion of acid and the digestive activity, but when used in large quantity they stop the secretion and digestive power for several hours; that under this medication from day to day the activity of secretion and digestion constantly diminish, and at last the sensibility of the stomach to irritants is lessened to such an extent that no kind of food suffices to produce acid, and frequently not even pepsin secretion." Ewald found, however, that in ten persons subjected to a course of thermal water, and tested at frequent intervals during the time, half had slightly lessened acidity, the other half increased, and the lessening occurred in those who before the treatment had a high acidity. Jaworski has also found borax to act primarily as an irritant in small doses, but in large doses it causes a lessening or total drying up of the secretion. Wolff, on the ground of the experience obtained of the action of common salt, Carlsbad salt, and borax, has administered a powder of the following composition in cases of hyperacidity, with or without hypersecretion, with great success: Sulphate of soda, 30 g.; sulphate of potass, 5 g.; chloride of soda, 30 g.; carbonate of soda, 25 g.; sodæ bibor, 10 g.; half a teaspoonful three times a day, in half a glass of lukewarm water, fasting, and two hours before dinner and supper. In a typical case of hypersecretion the quantity of fluid in the fasting stomach was reduced, by four weeks' treatment, from 50 c. cm. to a few cubic centimeters, and the acidity, at the height of digestion, by one-third. Referring to the influence of acids on the secretion, Wolff found that when hydrochloric acid was administered to three patients in whom it was habitually absent, for periods of eight days, there was not in a single case any distinct action on the HCl secretion. A distinction ought to be made, perhaps, according to the results of Jaworski's experiments, between ordinary acids and carbonic acid, since the latter exercises a purely mechanical influence, and in some raises the acidity considerably, and increases the peptic power of the gastric juice.

UNSELFISHNESS.

THE SPLENDID NOBILITY OF SELF-FORGETFULNESS.

The wonderful life and work of Dorothy Dix afford a striking illustration of the lofty heights to which a soul may rise who sinks self. Miss Dix at an early age began teaching the street arabs and those who were too poor to pay for schooling. Later her attention was called to the frightful condition of the insane in Massachusetts where she lived at that time. A maniac was kept by whoever would bid the lowest. No ferocious wild beast received such terrible treatment as did the poor human being who had lost his mind; starved, penned in filth and often half frozen, the insane presented a sight too pitiful for words. Miss Dix personally investigated the matter; she asked no aid; from her own limited purse she paid all expenses. When an overwhelming array of facts had been collected, she appealed to the legislature where she met with fierce opposition; conservative thought, and a blunted public conscience and rascality assailed her. She faltered not until victory crowned her work, and the insane of this Commonwealth were better provided for than ever before. Then began her pilgrimage. She visited State by State; she revolutionized the treatment of the insane in America. But this was not enough; the most pitiable class in other lands were to be looked after. Accordingly she visited the various European nations even to the heart of Turkey. Everywhere victory crowned her efforts. When the War of the Rebellion broke out she immediately entered the hospitals and served as nurse during the long, weary struggle. After peace once more brooded over the Republic, she set about her old work of bettering the condition of the insane. Such was her glorious life. She shrank from fame and abhorred ostentation. She only asked to be allowed to work silently for those who most needed aid. Her life was as beautiful in reality as any angel vision that ever floated through artist's brain. Another well-known life which exemplified unselfishness in a marked degree was Wendell Phillips, the idolized son of the cultured and elect of Boston, the popular child of Beacon Hill, when he stood with the strongest probability of having given to him the highest honor he could ask from his State, if he was true to conservative and popular thought; while on the other side loomed up before him, duty in sombre garb and sackcloth, offering him no chaplet save the supreme gift of the ages so little valued to-day—consciousness of doing right. When he was forced to decide between the right with ignominy, scorn, and social ostracism ready to be heaped upon him; or the glory of his day for stifling conscience and obeying the dictates of fashionionable and conservative thought; when joy, ease, and the sunshine of popularity beckoned him from duty's dictates, he chose what he felt to be right, though he knew in so doing he closed against himself the bright vista down which he had so often and so fondly dreamed he would some day walk. This is an illustration of unselfishness worthy our emulation. Another noteworthy example of unselfishness was seen in the action of Dr. Guyon. A terrible plague was raging in Marseilles—it seemed that the entire population would be cut off. The physicians of the city were unable to stay the curse, not knowing the nature of the disease. The dissection of a corpse seemed to be the only means of giving the necessary knowledge, but the contagious nature of the disease and its fatality made it sure death to any one who undertook it. A counsel of physicians had for some time deliberated; finally Dr. Guyon, one of the most celebrated doctors of the city, and a man in the very prime of life, arose, saying: "So be it; I devote my life to the safety of my country." He dissected a corpse, and critically examined all conditions of the organism that would throw light on the nature of the malady. He then wrote out a careful, detailed description of the result of his investigations, placing the paper on which it was written in a vase of vinegar to prevent communicating the contagion to those who might read it, after which he retired to his apartments, where he died in twelve hours. One other example representing this spirit, though in a different way, was seen in the brave action of Grace Bussell. The steamer Georgette was stranded off Perth; a boat laden with women and children left the wreck, but was swamped by the surf. Clinging to the little bark, these victims of the ocean's caprice shriked wildly for aid, only to be mocked by the loud mocking of the billows. Suddenly over the hill-top and down the precipitous coast a young woman, mounted on a coal-black charger, came dashing along at break-neck speed. Arriving at the brink of the sea she paused a moment, then dashed forward into the water; her steed tried to turn, but she urged him on till the boat was reached. In this manner she made several trips, and succeeded in landing all who were alive. Then, almost fainting from fatigue and drenching wet, but thinking not of herself, she galloped home to send relief to the poor creatures she had rescued. We have taken these five illustrations from the innumerable instances of this kind that illuminate the history of every age, because they serve as examples of different phases of this lofty virtue, and because many people thoughtlessly regard its cultivation of little moment, when in truth it is one of the foundation stones on which true character rests. It is

a lesson in the higher education that is difficult to learn, but rich in its fruition—something that yields a harvest of happiness to others, and a hundred-fold to the one that acquires it. Not in the empty honor of funeral pageant, not in the brilliant eulogium of gifted orators, not in the splendor of costly sepulchres, do the true and the noble perpetuate their names and their callings on earth, but in the sweet fragrance that follows their unselfish lives, by the beauty that lingers in their deeds long after their spirits have been promoted.—*B. O. Flower in Spectator.*

LUNG GYMNASTICS.

HOW TO RELIEVE AN OVERWORKED BRAIN.

A Swiss doctor says that many persons who extend their mental work well into the night, who during the evening follow attentively the programme of a theatre or concert, or who engage evenings in the proceedings of societies or clubs, are awaked in the morning or in the night with headache. He is particular to say that he does not refer to that headache which our Teutonic brethren designate *Katzenjammer*, that follows certain convivial indulgences. This headache affects many persons who are quite well otherwise, and it is due in part to the previous excessive work of the brain, whereby an abnormal flow of blood to that organ is caused; in part to other causes, for example, too great heat of rooms, contamination of the air with carbolic acid, exhalations from human bodies, and tobacco smoke. For a long while the doctor was himself a sufferer from headache of this kind, but of late years has wholly protected himself from it by simple means. When he is obliged to continue his brain work into the evening, or to be out late nights in rooms not well ventilated, instead of going directly to bed he takes a brisk walk for half an hour or an hour. While taking this tramp he stops now and then and practices lung gymnastics by breathing in and out deeply a few times. When he then goes to bed he sleeps soundly. Notwithstanding the shortening of the hours of sleep, he awakes with no trace of headache. There exists a clear and well-known physiological reason why this treatment should be effective.

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

June.

MEAT.—Beef, lamb, mutton, ham, kidneys, liver, sausage, veal.

GAME AND POULTRY.—Pigeon, chicken, duck.

FISH.—Anchovy, bass, bluefish, blackfish, cod, eels, clams, flounder, haddock, halibut, herring, lobsters, mackerel, mussels, perch, porgie, prawn, salmon, shad, turtle, trout, sturgeon, whiting, weak-fish.

VEGETABLES.— Beans, cucumbers, carrots, cauliflower, lettuce, onions, parsley, parsnips, potatoes, shallots, spinach, turnips, radish, rhubarb.

FRUITS.— Cherries, strawberries., bananas, pineapples.

PRACTICAL RECIPES.

TURNIP SOUP.—Cut a piece of the scrag of mutton, about two pounds, into small pieces, and put them to cook into five quarts of cold water; when it begins to boil skim well and set it where it will stew gently for three hours or until the meat falls to pieces; then strain through a colander and let it get cold. Skim off the fat and add light turnips peeled and cut into thick slices and half a cup of rice. Cook gently until the turnips are soft, then season.

BOILED TONGUE AND TOMATOES.—Select a fresh tongue; wash, trim and scrape it, and cook it for three-quarters of an hour in cold water; put it in a pot, cover with hot water and cook until it is tender, then take it out of the water, peel off the skin, lay it on a hot platter and pour over it some tomatoes prepared as follows: Peel some tomatoes and slice them thin and put with them some fine dry crumbs—enough to thicken them when done; put them in a kettle, and cook gently, stirring frequently; add to them half a small onion and five or six cloves, and when done take out the onion and cloves and add a large spoonful of butter, pepper and salt. Have this ready when the tongue is done; pour it around the tongue on the platter and serve very hot.

BROILED TOMATOES.—Select fine firm tomatoes and cut them in thick slices. Put them between the wires of a toaster and cook for a moment first on one side, then on the other; pour over them some melted butter in which there is pepper and salt and a very little onion juice, and serve very hot.

BAKED CHICKEN WITH TARTARE SAUCE.—Take a chicken and split it down the back; wipe it carefully with a damp cloth, spread it all over with butter, dredge with salt and pepper and bake until very tender, then serve with tartare sauce.

TARTARE SAUCE.—Mix together the yolk of a hard boiled egg, the yolk of an uncooked egg, a teaspoonful of mustard, a teaspoonful of sugar, a teaspoonful of salt and a quarter of a teaspoonful of pepper. Now add a little at a time, stirring carefully, half a small bottle or half a teacup of olive oil. This should make a stiff mixture. Add vinegar to taste, probably about three tablespoonfuls of it. Then grate in a little onion —very little—and add a tablespoonful each of chopped capers and pickles. Cayenne pepper may be added. Without the capers and pickles this is mayonnaise.

BATH BUNS.—Take some regular bread dough that has been raised till light, about four pounds, and spread it on a board and add to it the following ingredients after they have been mixed together. The yolk of four eggs, six ounces of butter, eight ounces of lump sugar broken into small pieces but not crushed, the candied peel of a lemon chopped fine and a little lemon juice. Mix these ingredients thoroughly into the dough and then divide the dough into pieces the size of a biscuit and lay them in well-greased tins; set to rise till they are very light, then wash over with egg, put some powdered sugar on top of each and bake.

GINGER CAKE.—One and a-half pounds flour, one-half pound brown sugar, one-half pound butter, one pint molasses, three large tablespoonfuls of ginger, one tablespoonful of sweet lard, cinnamon, mace and grated lemon rind. Roll out very thin.

PINEAPPLE SHERBET.—Cut up a ripe pineapple into small bits, sprinkle it with sugar and set away for several hours, then pour off the juice and squeeze out all that remains in the fruit. To one pint of juice add one pint of water, the juice of a large fresh lemon, and enough sugar to make it very sweet before freezing. Freeze, and when it is nearly done add to each quart the white of an egg beaten up very stiff and sweetened with powdered sugar. Mix thoroughly into the ice and freeze until stiff.

LITTLE CAKES.—One and one-quarter pounds of flour, one pound of powdered sugar, one pound of butter, eight eggs. Beat the sugar and butter to a light cream, adding in the eggs gradually while doing so. Work in the flour; spread the mixture in two very shallow buttered tins and bake in a moderate oven. When cold cover with peach or other jam, put two together and ice, and while wet sprinkle thickly with ground sweet almonds and cut into little squares or diamonds.

AIR.

HOW ITS MOTION IS IMPARTED AND CONTROLLED.

The air is in constant motion, and every current of air, from the lightest zephyr to the blast of the hurricane, is called wind. The force which sets and maintains it in motion is the warmth from the sun's rays. These pass through the air without appreciably warming it, but impinging upon the surface of earth and ocean they are absorbed; and the heat being again radiated, warms the atmospheric strata nearest the surface. But the ratio in which the different regions of the earth are warmed varies considerably. Around the the equatorial belt the sun's rays fall vertically, or nearly so, and the heat is absorbed in a narrow area, but in higher latitudes the slanting rays diffuse an equal amount of warmth over a wider area. The zone of the greatest heat has its centre north of the equator, owing to the fact that there is more dry land in the Northern Hemisphere, and that solid bodies absorb and radiate more heat than water. Over this warm region, which by no means covers the whole tropic zone, the heated air at the surface, becoming lighter by expansion, ascends through the cooler strata above it. It could not, however, continue to rise unless it were replaced, and this occasions the inrush from north and south of cooler air, which in its turn gets warmed and ascends. The ascent of the upward currents is arrested as they reach a rarer atmosphere, and being debarred from falling back by the presence of ascending currents from below, they take a horizontal course towards the poles. A vertical ascending current of air is not regarded as a wind, because there is no horizontal motion attending it, and the zone of ascending columns is consequently dreaded by the sailors as the region of calms. Occasionally the calm is interrupted by thunder-storms, due to the watery vapor which the ascending currents carry up with them. This, by its condensation in the upper atmosphere, forms clouds from which thunder-storms break out, liberating the heat, which gives a new impulse to the ascending currents. The warm, moist air rising from the region of calms, and taking its course towards the poles, does not remain in the upper air. Even before it leaves the tropic regions it divides, giving off a vertical descending current, which, reaching the lower cool currents, is borne back to the torrid zone again. The regions through which it passes are again characterized by calms and storms. The main current, after having given off this descending current, continues its course towards the pole, approaching the surface of the earth nearer and nearer, until it reaches it in the temperate zone. Thus arises a double circulation, the lesser caused by that portion of the ascending current which descends near the edge of the tropics and flows back to the equator; the greater caused by the main volume, which, descending gradually in higher regions, and becoming cooled, flows back over the surface towards the equator, and is known, within the tropics, as trade winds. This double circulation would occur uniformly in all meridians if the earth stood still, but as a consequence of the earth's motion every current of air on the surface is appreciably deflected from its original course. As the earth revolves on its axis, from west to east, in twenty-four hours every part of its surface, with its atmosphere, describes a circle greatest at the equator and lessening towards the poles. While a point on the equator is travelling 463 miles from west to east, a point under 45 deg. lat. traverses only 326 miles, and under 60 deg. lat. only 231 miles. Every place takes its own atmosphere along with it. If, then, a volume of equatorial air travelling at a speed of 463 miles an hour were suddenly transferred to the latitude of 45 deg. where the air has a speed of only 326 miles, it would generate a gale rushing from west to east at a speed equal to the difference, *i. e.*, 137 miles an hour; while a volume of air transplanted from 45 deg. lat. to the equator would create a terrific hurricane from the east. Happily such sudden transfers, with their violent consequences, do

not actually occur. Nevertheless the aerial currents, on their way from the equator to the poles and back again, are subject to the influence of the earth's revolution, only gradually, and for that reason with less violent results. The equatorial current, apart from its drift from south to north, is also subject to the motion from west to east, imparted to it by the speed of the earth's revolution at its birthplace on the equator; and traversing regions in which the speed from west to east is steadily diminishing, it is deflected from its course of south to north, in an easterly direction, until the original south wind becomes a sou'wester. On the same principle the Polar or return current, on its way to the tropics, entering regions in which the rate of revolution is increasingly higher, gets left behind at every stage, until the original north wind becomes a nor'easter in the tropics. The trade wind in the Northern Hemisphere has consequently one invariable direction, entering the tropics as a nor'easter. No wonder, then, that Columbus's sailors, who knew nothing of the trade winds, argued, from the prevalence of the nor'easter on their outward course, that they would never be able to return to Spain. The upper or counter trade winds, subject to the same law, pursue an opposite course, at a height far above that of the highest mountains; the dust from volcanoes is, nevertheless, sometimes projected into and borne along by them.

MASCOTS AND TALISMEN.

LUCKY OBJECTS WHICH PEOPLE CARRY TO INSURE GOOD FORTUNE.

Almost every one has a belief in luck. Some call it fortune. Some go so far as to describe it as providence. A lucky hit, a fortunate chance, a Providential escape—these are every day phrases by all sorts and conditions of men. There is a story told of a clergyman of the Church of England, who, when he was going to preach, always conveyed a little old-fashioned bookmarker to the pulpit and laid it upon the desk. It had been made by his grandmother years before, and had the words "turn over" worked in green (now faded) silk upon it. The clergyman had possessed it from boyhood, and it represented to him a command to proceed, to strive, to succeed. It was his mascot, his luck. Numbers of people keep in their pocketbooks a little piece of dried-up stuff wrapped in a piece of tissue paper. Ask what it is, you will be told it is the tip of a beef tongue. It is carried for luck. In the records of the lost property offices that tongue tip is often mentioned. It has frequently served as a means of identification, for the superstition is that the purse which contains the "tip of a tongue that never told a lie," can never be lost. And talking of purses suggests the ancient custom of handsel. To make any one a present of a pocketbook without having first placed in it a coin of some value is to give poverty instead of wealth, and the fortune, or luck, will be in proportion to the value of the handsel. In England and Scotland no beggar will start upon his tramping excursion in the spring without half a horseshoe concealed somewhere about his person. This is known throughout the canting fraternity as "beggar's luck." The once famous King of the Beggars, Bamfylde More Carew, was never without this bit of old iron, as is told by himself in his autobiography. The old iron theory of luck is mainly practised by people whose business or inclination leads them to wander. There is a French actress now traveling in this country who is never without an old nail in her pocket. Among French and Russian actresses especially the "clou" is indispensable to good fortune. Soldiers' luck is generally dependent upon the possession of an old button cut from the coat of a dead soldier, and if it be from an enemy so much the luckier. This fancy exists in all European armies, and it is quite possible that among the soldiers of our own small army some similar superstition exists. A decidedly quaint superstition in this city is cooks' luck. It is a portion of a bowl of an old silver spoon. It had been worn so thin with age that the handle had first been broken off and then the bowl had split in two. A certain chef in New York carries the remaining half of the bowl "for luck." And he would not part with it for anything. That a tailor should be a trifle superstitious is not very surprising, perhaps, but the object of their fetish worship is peculiar. A piece of white clarified beeswax is the favorite. Possibly it is supposed to represent the toughness of the thread used, but at any rate in many a snip's pocket will be found the bit of wax carefully preserved, never used except to touch with the tips of the fingers before beginning any fresh work in order to insure a lucky conclusion. Shepherds' luck" consists of the thyroid bone of a lamb. The tiny, partially ossified cartilage is carefully abstracted from the first born of a flock when it is killed. It must be the first born or it is of no use. Every lamb born thereafter is rubbed gently with this to keep witches away, and if a sheep or lamb falls sick the touch of this talisman is of more value than any medicine.

MENTAL EFFORT.

UTILIZING ELECTRICITY AS A MEASURE OF THOUGHT.

Mr. J. L. Balbi says: It is well known to the medical profession that every mental effort causes a rush of blood to the brain, and that the amount of blood depends on the "intensity of the thought; but rush of blood means a rise in temperature, and if we could measure this we would be able to determine in a rough way, the "power necessary for the generation of any thought or mental effort. I accomplish this object in the following manner: I have a head gear of some light, high-conducting (heat) substance. In its middle or any other convenient position I fix a thermo-electric pile, and connect this, by means of flexible wires or otherwise, to a sensitive galvanometer. The extreme sensibility of the thermo-electric pile is well known, and therefore whatever rise in temperature takes place, consequent to the rush of blood, would be instantaneously indicated by the galvanometer. The utility of such an apparatus may not appear at first sight of great importance, but if we consider for an instant the facility or difficulty with which children at school learn their lessons, any doubts we may have entertained as to its practicability will be immediately dispelled. By such a contrivance would we ascertain the "brain power" of boys and girls, nay, even men, and thus be in a position to indicate in what direction their mental efforts ought to tend.

FASHIONABLE JEWELS.

SNAKES, REPTILES, AND JOAN OF ARC'S SWORD.

A new fad in jewelry has seized the ladies of Paris. The real Parisienne must have a jeweled fad. And one of the peculiarities of this tendency is that it invariably runs to animals, insects, living creatures of the lower orders, venomous, repulsive or suggestive. It was not long ago when the haute monde dangled gold and silver elephants from their bracelets or rings. Then they evoluted and adopted the "American hog," and Chicago was properly represented on the fair neck, or wrist, or at the belt of every dashing wearer of Worth's or Felix's outfits. So now it is Cleopatra's asp. The deadly creature is made in diamonds and glitters instead of bites. Of course it was "la deesse Sarah," the reincarnation of the "Serpent of Old Nile," the—but why multiply expletives? You have her with you and can make them for yourselves. It was she who inspired the fashion, as she has inspired a score of others, and the beau monde rushes wildly in the wake. The idea of an asp has evolved other cognate reptiles, and so one is not surprised to see specimens of the natural order lacertilla, which the vulgar call lizards, glistening in all the colors of their varied hues. They are made of diamonds and sapphires, and to a sensitive soul loathsomely natural. But that matters not to the votaries of the fashion, who not long ago attached live beetles by little gold chains to their bodices, like the Mexicans, and let the little beasties crawl over their white necks, or imprisoned glow worms in the mazes of their tulle draperies. But there is another exceedingly popular bauble which deserves to be chronicled because it also owes its being to the adoration which is offered at the shrine of La Bernhardt, and to the exquisite purity and fervor which she seemed to breath forth in her performance of "La Pucelle," and proves that she can, by the imaginative power of her heart, at once sink to the depth of degradation, or rise to the height of exquisite purity. This piece of bijouterie is the Joan of Arc sword, as the jewelers call it. It is worn on all occasions, and even sparkles at the throat of the fair owner when she wears a high bodice. The rule that obtains now in the wearing of jewels is, that the largest of the lot shall be used as a buckle at the waist, while the earrings are small and usually consist of a single stone, an emerald, a turquoise or a sapphire, which may, however, be surrounded by diamonds. There is now a definite rule, too, with regard to the wearing of bracelets. Hitherto, a lady might go to breakfast in a wrapper with a score of jingling metal circlets adorning her more or less white and fragile wrist, but now all this is changed. No one who is any one is ever seen in daylight with a bracelet, even in the afternoon. Madame or mademoiselle, when she takes her walk abroad, must have her wrist covered only with her gloves. But at night the jewels get their innings. Then every one may be taken from the jewel case and put on so that miladi may resemble that heroine of the nursery rhyme, who wore rings on her fingers and bells on her toes, as far as the jingling she makes with her bangles goes.—*Western Jeweler.*

LIQUID FUEL.

PETROLEUM SUPERIOR TO COAL FOR VESSELS OF WAR.

At a recent meeting of the Shipmasters' Society, London, a paper was read on "Liquid Fuel in Ocean Steamers." Premising that the question of liquid fuel in steamers was not a new one, the lecturer stated that, partly owing to the cheapness of coal, and partly to the timidity of owners to adopt it, the use of oil fuel had not been much taken up by steamship owners. Now, however, the aspect of affairs was changing. By the use of petroleum, he stated, that the fires were completely under the control of the engineer on watch, who would regulate them so as to have any pressure of steam he required, without being dependent on his firemen. The great advantage of oil fuel to the shipowner was that he could carry his fuel in a space that was now wasted, namely, a cellular bottom of the ship, or in his ballast tanks. As the consumption of oil, compared with coal, was, weight for weight one-half—ten tons of coal, in other words, being only equal to five of oil—the storage of fuel could be made much more compact and easier of access; There was increased speed in the fuelling the ship; and port charges were avoided, as more fuel could be carried in proportion than formerly. Petroleum was known to exist in all parts of the habitable globe, and it was hardly probable that competition would not bring the fuel within easy reach of the commercial world. For many reasons oil fuel was of more value to torpedo boats and ships of war than it probably was to merchant steamers. As to the question of fueling our men-of-war at sea during a blockade, he thought that the large tank steamers of the present day could always fuel the fleet even in heavy weather. He maintained that the oil was perfectly safe while on board ship: that it could be stored on shore easily, and in the event of a fueling

Indigestion

Horsford's Acid Phosphate.

A preparation of phosphoric acid and the phosphates required for perfect digestion. It promotes digestion without injury, and thereby relieves those diseases arising from a disordered stomach.

Dr. E. J. WILLIAMSON, St. Louis, Mo., says: "Marked beneficial results in imperfect digestion."

Dr. W. W. SCOFIELD, Dalton, Mass., says: "It promotes digestion and overcomes acid stomach."

Dr. F. G. MCGAVOCK, McGavock, Ark., says: "It acts beneficially in obstinate indigestion."

Descriptive pamphlet free.

RUMFORD CHEMICAL WORKS,

PROVIDENCE, R. I.

BEWARE OF SUBSTITUTES AND IMITATIONS.

Caution:—Be sure the word "Horsford's" is *printed* on the label. All others are spurious. Never sold in bulk.

Fine Table Wines

From our Celebrated Orleans Vineyard.

Groad Bornsthy & Co.

Producers of the

ECLIPSE

CHAMPAGNE,

530 Washington St.

SAN FRANCISCO.

GENERAL AGENCIES:

NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOSEPH R. PEEBLES' SONS CO., 73 West Fourth Street.
DETROIT: G. & R. MCMILLAN & CO., 131 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.

PURE PEPSIN

In Powder and Scale.

MANUFACTURED BY

ARMOUR & COMPANY, Chicago.

Guaranteed free from adulteration or make-weights; of excellent physical properties and high digestive power.

Under similar conditions, **ARMOUR'S PEPSIN** will exhibit greater activity than any other pepsin now before the profession.

The Manufacturers will be pleased to supply members of the Medical Profession with samples of their Pepsin, and with full details regarding digestive strength, if desired.

port being bombarded, shells could not set fire to the tanks; and it could be handled without risk of fire or explosion from the shore to the ships, or *vice versa*. His object in reading the paper had been to allow the mercantile world in general, and the members of the Shipmasters' Society in particular, to know the progress oil fuel was making; the comfort it was to engineers and all concerned; its pecuniary advantages to the merchant who could avail himself of it; its peculiar adaptability to ships of war; and its special value to large, first-class passenger steamers, where cleanliness and the comfort of the passengers were desired. It could be adapted to any boiler, either afloat or ashore.

SUBTERRANEAN FIRES.

GRAPHIC DESCRIPTION OF A SANDWICH ISLAND VOLCANO.

Some idea of the terror of volcanoes may be gathered from an account of an eruption in one of the Hawaiian Islands, as graphically described in the *London Budget*, when the crater was filled from five hundred to six hundred feet deep with molten lava, the immense weight of which broke through a subterranean passage of twenty-seven miles and reached the sea, forty miles distant, in two days, flowing for three weeks and heating the water twenty miles distant. Rocks melted like wax in its path; forests crackled and blazed before its fervent heat; the works of man were to it but as a scroll in the flames. Imagine Niagara's stream above the brink of the falls, with its dashing, whirling, madly raging waters, hurrying on their plunge, instantaneously converted into fire—a gory-hued river of fused minerals; volumes of hissing steam arising; smoke curling upward from ten thousand vents, which give utterance to many deep-toned mutterings and sullen, confined clamorings; gases detonating and shrieking as they burst from their hot prison house; the heavens lurid with flames; the atmosphere dark and oppressive; the horizon murky with vapors and gleaming with the reflected contest. Such was the scene as the fiery cataract, leaping a precipice of fifty feet, poured its flood upon the ocean. The old line of coast, a mass of compact, indurated lava, whitened, cracked and fell. The waters recoiled and sent forth a tempest of spray; they foamed and lashed around and over the melted rock, they boiled with white heat, and the roar of the conflicting agencies grew fiercer and louder. The reports of the exploding gases were distinctly heard twenty-five miles distant, and were likened to a whole broadside of heavy artillery. Streaks of the intensest light glanced like lightning in all directions; the outskirts of the buring lava as it fell, cooled by the shock, were shivered into millions of fragments and scattered by the strong wind in sparkling showers far into the country. Six weeks later at the base of the hills the water continued scalding hot and sent forth clouds of steam at every wash of the waves.

FISH EXHIBIT.—The Fish Commission's exhibits of aquaria at the Chicago Fair is to be immensely attractive. As thus far conceived, though details have not been perfected, the annex for the purpose will be 150 feet square and entirely of glass. There will be 1,000 feet in length of glass tanks filled with all sorts of water creatures, one-half being devoted to marine life and the other half to the display of fresh-water specimens. The visitor will walk between two lines of aquaria the entire circuit of the building. In the middle of the latter will be a great tank full of salt water brought all the way from the Atlantic.

BOILER SCALE EXPENSIVE.—Experiments made 20 years ago on the non-conducting properties of boiler scale gave astonishing results. The effect of the scale accumulation is given as follows: $\frac{1}{16}$ inch thick requires 15 per cent. more fuel; $\frac{1}{4}$ inch 60 per cent. more fuel, and $\frac{1}{2}$ inch thick 150 per cent. more. To produce steam at 90 pounds pressure, in a clean boiler, only 355 degrees of heat are required, but with heavy scale this temperature must be increased 200 to 300 degrees. For $\frac{1}{2}$ inch of scale the heat must be 700 degrees, or almost a low red heat for the iron.



As your grocer for

The Cleveland Cook Book,

(free), containing over 350 proved receipts. If he does not have it, send stamp and address to the Cleveland Baking Powder Co., 81 Fulton Street, New York, and a copy will be mailed you. Please mention this paper.

PISO'S CURE FOR CONSUMPTION

CURES WHERE ALL ELSE FAILS. Best Cough Syrup. Tastes good. Use in time. Sold by druggists.

Armour's Extract of BEEF.

The best and most economical "Stock" for Soups, Etc.

One pound equals forty-five pounds of prime lean Beef.

Send to us for our book of receipts, showing use of **ARMOUR'S EXTRACT** in Soups and Sauces.

ARMOUR & CO., Chicago.

"ONE BILLION."—When one speaks of a billion in in England or Germany, a million million (1,000,000,000,000) is understood, but in the United States, as in France, Spain and elsewhere, the term is used to signify a thousand million only (1,000,000,000). It would therefore be well for the German-American press to to employ the term in this sense, precisely as we employ the word mile to signify an English mile and not a German or any other mile.— *Deutsche Allgemeine Zeitung* (*Chicago*).

HIGH, BUT CHEAP.—Chicago will soon have the largest ten-cent lodging house in the world. The building will be seven stories high, will cost eighty-five thousand dollars, and will be heated by steam and lighted by electricity. Each of the three hundred and sixty rooms will be seven by six feet, provided with iron bedsteads and hot and cold water. The floors will be of tile and the wainscoting of marble.

IMITATION GROUND GLASS.—Put a piece of putty in muslin, twist the fabric tight and put it into the shape of a pad; well clean the glass first, and then treat it with putty all over. The putty will exude sufficiently through the muslin to render the stain opaque. Let it dry hard and varnish. If a pattern is required, cut it out in paper as a stencil, place it so at not to slip, and proceed as above, removing the stencil when finished. If there should be any objection to the existence of the clear spaces, over it with lightly opaque varnish. In this way very neat and cheap designs may be painted on glass doors.

Do You Want a

HANDSOME

GOLD WATCH?

LADY'S OR GENTLEMAN'S,

—IF SO,—

WATCH THIS SPACE IN NEXT NUMBER,

—AND—

IT WILL TELL YOU HOW TO GET ONE AT LITTLE COST.

A VALUABLE BOOK FOR NOTHING.

The AMERICAN ANALYST will send to any person who will forward a New Subscription with One Dollar, a copy of

THE FAMILY CYCLOPÆDIA OF USEFUL KNOWLEDGE.

This is unquestionably one of the most interesting, entertaining and instructive books ever published. It is a universal educator for every member of the family circle, filled with useful information from beginning to end, and this information is given in such an attractive and pleasing way that the book is quite as entertaining as it is instructive. It treats of hundreds of subjects of which no man, woman or child who seeks to be well informed can afford to be ignorant, yet of which the masses of people are entirely unlearned. It contains the cream or substance of a dozen ordinary volumes, and is one of the most valuable and useful books a family can have in the house. No living man is so well informed that he may not learn from it. It is a book for the masses, for old and young, rich and poor, and will be read with pleasure and profit by all. It will likewise be found of great value as a work of reference. The book is profusely and elegantly illustrated, and is conveniently divided into departments, as follows: ***Biography, History, Natural History, Travels, Manners and Customs, etc.; The World Illustrated, Useful Arts and Manufactures, Trees, Plants, Fruits, etc.; Great Inventions, Mining, Wonders of the Sea, Familiar Science, Law for the Masses, Statistical and Miscellaneous.*** All the above subjects are fully and ably treated in this valuable book. It is a vast storehouse of useful and entertaining knowledge—unquestionably one of the best and most valuable books ever published in any land or language. No cyclopædia ever heretofore published at twice the cost is to be compared with this book in point of artistic make-up, beauty, and excellence of illustration, and quality of contents. As a holiday or birthday present for any one, nothing more appropriate or acceptable could possibly be selected. THE FAMILY CYCLOPÆDIA OF USEFUL KNOWLEDGE is a large and handsome book of 544 pages, 12mo, printed upon fine paper and elegantly bound in cloth, embellished with artistic designs in black and gold. It contains ***Two Hundred and Seventy-three Beautiful Illustrations,*** the original cost of which was over $5,000. The book will be sent by mail, post-paid, to any person sending a ***New Subscription with One Dollar.*** It is as large and handsomely gotten up as books usually sold at $1.50 and $2.00, and in the quality of its contents is worth a dozen ordinary volumes

ADDRESS ANALYST PUBLISHING CO.,

—— 19 PARK PLACE, NEW YORK. ——

HOSMER, CRAMPTON & HAMMOND,

NO. 43 COMMERCIAL STREET,

BOSTON.

COMMISSION MERCHANTS,

HAY, STRAW, FLOUR & GRAIN.

E. B. HOSMER, G. W. CRAMPTON, BENJAMIN HAMMOND, A. L. ROBINSON.

BOSTON HAY AND STRAW MARKET.

Hay, choice to fancy, in large bales	$15.00 to $15.50
Hay, choice to fancy, perpetual pressed bales	14.00 to 15.00
Hay, fair to good	13.00 to 14.00
Hay, poor to ordinary	11.00 to 12.00
Hay, Clover and Clover mixed	10.00 to 12.00
Hay, swale	8.50 to 9.00
Straw, Rye, good to prime	17.50 to 18.00
Straw, Oat	8.00 to

BOSTON, May 29, 1891.

Receipts for five days, Saturday being a holiday, 199 cars of Hay and 12 cars of Straw; corresponding week last year, 143 cars of Hay and 24 cars of Straw. Receipts are moderate and market fairly steady at quotations. The demand is not active, but about sufficient to absorb present receipts. Should they increase materially however, market would be lower. Rye straw is steady with some choice cars selling above quotations.

H. F. WILSON,

WIRE BALE TIES,

458 WEST 38th STREET, New York.



HAMMOND'S

CELEBRATED

Calumet Oleomargarine

Strictly pure, cheap and healthful.

Ask your grocer for it.

Put up in packages of all sizes, also prints and rolls.

C. H. HAMMOND CO.,

607 to 615 THE ROOKERY,

CHICAGO.

Also offices at Boston, South Omaha, Neb., and Hammond, Ind.

We can save you Fifty Dollars when you Build. See



A complete set of Plans to build from, simply state about price of dwelling desired. 25 cts. in stamps. Our book "Beautiful Homes." 25 cts. Our monthly book "The National Builder," 25 cts. Address

The National Builder, Adams Exp. Bldg., Chicago, Ill.

We shall be glad to supply our readers with any periodical published at club rates.

Send us a postal naming periodical and we will quote you prices.

ANALYST PUBLISHING CO.,
19 Park Place,
New York.

HARTSHORN'S SELF-ACTING SHADE ROLLERS

NOTICE SCRIPT NAME OF Stewart Hartshorn ON LABEL, AND GET THE GENUINE HARTSHORN

GOLD MEDAL, PARIS, 1878.



W. BAKER & Co.'s Breakfast Cocoa

from which the excess of oil has been removed,

Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

THE GREAT AMERICAN TEA COMPANY

LADIES

GET UP ORDERS.
Entire New Departure.
A HANDSOME PRESENT TO EVERY SUBSCRIBER.

THE GREATEST INDUCEMENTS EVER KNOWN TO INTRODUCE OUR NEW GOODS.

If you enjoy a cup of **Delicious Tea** send in your orders. 3½ lbs. Fine Tea by mail on receipt of $2 and this "ad". Beautiful premiums given away with $5 orders and upwards. The **most extraordinary bargains** ever offered, during the next thirty days. China Tea Sets and Lamps with $10, $15 and $20 orders to introduce our excellent **New Crop Teas.** Formosa and Amoy, Oolong, Congou, English Breakfast, Japan, Imperial, Young Hyson, Gunpowder, Sun Sun Chop and Mixed. Good mixed teas 20c. per lb. Headquarters in United States for Fine Teas. One pound of our tea will go farther than three pounds of trash. Thirty years' national reputation for selling **Pure Goods Only.**

THE GREAT AMERICAN TEA COMPANY,
P. O. BOX 289. 31 and 33 Vesey Street, New York.

PUBLICATIONS OF THE

ANALYST PUBLISHING CO.

THE AMERICAN ANALYST.
Weekly. Every Thursday. $1 per year.

THE ROOFER, TINNER AND SHEET-IRON WORKER.
Monthly. 15th each month, $1 per year.

THE LEATHER MANUFACTURER.
Monthly. 1st each month. $3 per year.

Reliable agents and representatives wanted everywhere on liberal terms. Address

ANALYST PUBLISHING CO.
19 PARK PLACE, NEW YORK.

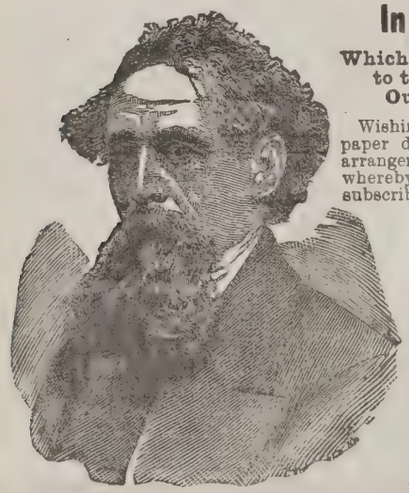
GRAND PREMIUM OFFER!

A SET OF THE

WORKS OF CHARLES DICKENS,

In Twelve Large Volumes,

Which we Offer with a Year's Subscription to this Paper for a Trifle More than Our Regular Subscription Price.



CHARLES DICKENS.

Wishing to largely increase the circulation of this paper during the next six months, we have made arrangements with a New York publishing house whereby we are enabled to offer as a premium to our subscribers a **Set of the Works of Charles Dickens,** in **Twelve Large and Handsome Volumes,** with a year's subscription to this paper, for a trifle more than our regular subscription price. Our great offer to subscribers eclipses any ever heretofore made. Charles Dickens was the greatest novelist who ever lived. No author before or since his time has won the fame that he achieved, and his works are even more popular to-day than during his lifetime. They abound in wit, humor, pathos, masterly delineation of character, vivid descriptions of places and incidents, thrilling and skillfully wrought plots. Each book is intensely interesting. No home should be without a set of these great and remarkable works. Not to have read them is to be far behind the age in which we live. The set of Dickens' works which we offer as a premium to our subscribers is handsomely printed from entirely new plates, with new type. The twelve volumes contain the following world-famous works, each one of which is published *complete, unchanged, and absolutely unabridged:*

DAVID COPPERFIELD,
MARTIN CHUZZLEWIT,
NICHOLAS NICKELBY,
DOMBEY AND SON,
BLEAK HOUSE,
LITTLE DORRIT,
OUR MUTUAL FRIEND,
PICKWICK PAPERS,
BARNABY RUDGE AND CHRISTMAS STORIES,
OLIVER TWIST AND GREAT EXPECTATIONS,
THE OLD CURIOSITY SHOP AND THE UNCOMMERCIAL TRAVELER,
A TALE OF TWO CITIES, HARD TIMES AND THE MYSTERY OF EDWIN DROOD.

The above are without question the most famous novels that were ever written. For a quarter of a century they have been celebrated in every nook and corner of the civilized world. Yet there are thousands of homes in America not yet supplied with a set of Dickens, the usual high cost of the books preventing people in moderate circumstances from enjoying this luxury. But now, owing to the use of modern improved printing, folding and stitching machinery, the extremely low price of white paper, and the great competition in the book trade, we are enabled to offer to our subscribers and readers a set of Dickens' works at a price which all can afford to pay. Every home in the land may now be supplied with a set of the great author's works.

"BILLET"

are

Carefully Selected

French Sardines,

Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS.

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,
HOWARD STREET, BOSTON, MASS.

OUR GREAT OFFER

TO SUBSCRIBERS

TO THE

AMERICAN ANALYST.

We will send the **ENTIRE SET OF DICKENS' WORKS,** *in* **TWELVE VOLUMES,** *as here described, all postage prepaid by ourselves, also* **THE AMERICAN ANALYST** *for* **ONE YEAR,** *upon receipt of* **$1.50,** *which is only* **50** *cents more than the regular subscription price of this paper.* Our readers, therefore, practically get a set of Dickens' works in twelve volumes for only 50 cents. This is the grandest premium ever offered. Up to this time a set of Dickens' works has usually been $10.00 or more. Tell all your friends that they can get a set of Dickens' works in twelve volumes, with a year's subscription to **THE AMERICAN ANALYST** for only **$1.50.** Subscribe now and get this great premium. If your subscription has not yet expired, it will make no difference, for it will be extended one year from date of expiration. We will also give a set of Dickens', as above, free and post-paid, to any one sending us a club of three yearly subscribers.

ADDRESS:

THE ANALYST PUBLISHING CO.
No. 19 PARK PLACE,
NEW YORK.

Tabasco Pepper Sauce

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced, by connoisseurs, to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY,

NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

To Subscribers, Readers and Advertisers.

SUBSCRIBERS' attention is called to the great variety of interesting and instructive subjects treated in this number. We respectfully ask the co-operation of our subscribers in extending our Subscription list, which will enable us still further to increase the value of the AMERICAN ANALYST to them.

The CASUAL READER is specially requested to examine our liberal premium offer.

ADVERTISERS who do not know of this Journal already, are respectfully referred to article headed "A Business Benefit."

ALL are kindly requested to peruse this number thoroughly.

The AMERICAN ANALYST can be had at any news stand in the United States. Any newsdealer will take orders for it, the American News Company being our wholesale agents. All postmasters will receive subscriptions.

NATRONA BI-CARBONATE OF SODA.

(ABSOLUTELY PURE.)



The nature of the raw material from which NATRONA BI-CARBONATE OF SODA is made—viz., kryolith, a mineral containing *pure sodium*—insures a purity and uniformity of product which cannot be obtained from any other known material. In making BI-CARB. SODA from any other raw material, the use of sulphuric acid is a necessity, but none is used in any part of the process of making NATRONA BI-CARB.; hence its entire freedom from the slightest trace of arsenic, which is always present in ordinary soda. Its absolute purity and entire freedom from all traces of *sulphate of soda*, common salt and other impurities, render NATRONA BI-CARB. NEARLY TASTELESS, and being bolted through the finest bolting-cloth, insures the finest stage of division.

To these indisputable facts the attention of CONSUMERS of soda is specially called. They are IMPORTANT, and should influence both those who use and those who sell soda, to buy and sell NONE BUT THE BEST.

The NATRONA BI-CARB. Soda is kept in stock by almost every wholesale druggist and grocer throughout the United States, of whom it may be ordered.

Natrona Bi-Carb. Soda is unequaled by any other brand of English or American Manufacture.

PENNA. SALT MANUFACTURING CO.,

NATRONA CHEMICAL WORKS. PHILADELPHIA, PA.

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.



RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,
184 Greenwich St., N. Y.

INSTRUCTIONS TO SUBSCRIBERS.

The **Names of all Subscribers** are registered as soon as received, and paper is always promptly forwarded.

Postage.—The postage to all parts of the United States and Canada is paid by the publisher.

Remittances of small sums may be made with comparative safety in ordinary letters. Sums of one dollar or more must be sent by registered letter or P. O. money order, otherwise we cannot be responsible for same. Silver must not be sent in a letter.

Postage Stamps will be received for the fractional part of a dollar, and in any amount when it is impossible for patrons to procure bills, but you must send one or two-cent stamps only.

SUBSCRIPTIONS.—The AMERICAN ANALYST will be sent one year to any subscriber for ONE DOLLAR. New subscriptions can begin at any time.

We Stop the Paper at the expiration of the time paid for unless a renewal of subscription is received. Those whose subscriptions have expired must not expect to continue to receive the paper unless they send the money to pay for it.

Change of Address.—Subscribers wishing their addresses changed must invariably give their former as well as new address.

Missing Numbers.—It occasionally happens that numbers of our paper sent to subscribers are lost or stolen in the mails. In case you do not receive any number when due, write us a postal card and we will cheerfully forward a duplicate of the missing number.

Most Important of All.—In every letter that you write us, never fail to give your full address, plainly written—name, post-office, County and State.

Address all letters to

THE ANALYST PUBLISHING CO.,
19 Park Place, New York.



A HIGH-GRADE PIANO

AT A VERY MODERATE PRICE.

NEW DESIGNS. FANCY WOODS.

Terms Easy. + Monthly Instalments.

TWO, THREE AND FOUR PEDALS.

Catalogues, Prices, Terms, Etc., sent to any address.

EVERY PIANO WARRANTED 5 YEARS.

(Mention this Paper.)

THE LABORATORY.

To Inventors, Manufacturers and Applicants for Patents

The AMERICAN ANALYST may be consulted upon all matters involving theoretical or applied chemistry. Advice and opinions given. Analyses and assays made. Patents perfected and secured. Terms reasonable.

Address, AMERICAN ANALYST,
19 Park Place, N. Y.

SWIFT'S

CHOICE

Chicago Dressed Beef

AND

MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,

UNION STOCK YARDS,

CHICAGO, ILLS.

THE ORIGINAL AND GENUINE
(WORCESTERSHIRE SAUCE).



LEA & PERRINS' SAUCE

In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—

Lea & Perrins

Beware of Imitations; see that you get Lea & Perrins'

For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS, NEW YORK.

GLENN'S
SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original and Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,

C. N. CRITTENTON,
115 FULTON STREET,
NEW YORK.

Be progressive and keep abreast of the times. Avoid dyspepsia by using **Lard Compound** and **Cottolene,** a substitute for lard.

The highest medical authorities pronounce them healthful; and expert cooks commend them.

Our **Clairette** brand of cotton oil soap is the purest and best laundry soap in the market; as pleasant to the hands as genuine castile.

N. K. FAIRBANK & CO.,
CHICAGO AND ST. LOUIS.

The Standard of Excellence.

KINGSFORD'S

OSWEGO

Pure and Silver Gloss



STARCH

KINGSFORD'S

OSWEGO CORN STARCH

FOR

Puddings, Custards, Blanc-Mange, Etc.

THE PERFECTION OF QUALITY.

WILL PLEASE YOU EVERY TIME.

Always ask your Grocer for these goods.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 24. NEW YORK, THURSDAY, JUNE 11, 1891. WHOLE No. 224

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - - $1 per year.
Single Copies, - - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.

Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.

Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,

H. LASSING, M. D., } Editors.
T. P. McELRATH, }

No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

Artificial Coffee 280
Carats 280
Domestic Dietetics 281
Editorials 277
The Latest Whim ; A Woman's Lodging House ; The New York Elevator.
Gravitation 281
Metheglin and Mead 280
Olive Oil Frauds 281
Poisons 278
The Matrimony Business 282
Tons of Currency 279

THE LATEST WHIM.

The latest fashionable "fad" is said to be the ostentatious display in public by fashionable mothers of a tender interest in their offspring. There has been with this class a long succession of favorites, and the period of change in each was that on which the fashion became so general that those who followed it were no longer distinguished from the common herd. Among the different varieties of the canine family each had its turn. The spitz, the poodle, the spaniel, the terrier and the ugly pug have been fondly cherished, provided with a nursery handsomely furnished, fed upon the daintiest viands, washed and perfumed, and bedecked with ribbons and jeweled collars, fondled and kissed and taken to ride in the lap of their mistress, and treated with the utmost tenderness and devotion. At last one of the patronesses of society in search of a new whim hit upon a device likely to captivate all the devotees of fashion. She had a lovely boy whose hair would curl without papers, and she put him on the pedestal for worship. If she wished to decline an invitation to lunch or to a card party, the new-found excuse was a fear that her darling was not quite so well, and she could not leave him. If the servant took him out for a walk, the mother must go close by his side, and manifest her interest and tenderness by a multitude of loving caresses that marked almost every step of the way. In the carriage he supplanted the harnessed pug, sitting in his mother's lap or by her side, and absorbing her closest attention. Her whole soul, judging by the outward manifestations, was wrapped up in her darling boy, and she had eyes and ears and smiles for nothing else. The fashion is taking rapidly, and motherhood is apparently the one absorbing thought. The gay woman of the world, who in the height of the season scarcely looked on the faces of her children from morning to night, has suddenly become absorbed in the care of the sweet darlings, and professes to devote her whole time and attention to their nurture. It is said that the nurse claims that her duties are rendered far more arduous in homes where the new fashion prevails. In addition to the ordinary care she has taken of her charge, she must now have them always ready at an instant's warning for a show parade. Intimate friends are invited to the nursery, into which the fond mother rushes when the names of the visitors are announced, and where she poses as the indefatigable caretaker of the little brood. Or, if the caller is not entitled to such intimacy, the hostess excuses herself as engaged in looking after her household pets, or takes them with her to the reception room as her inseparable companions. Those who have been admitted behind the scenes seem a little uncertain whether the children have lost or gained by this change in the habits of the mother. A dog of whatever species was usually rendered worthless by being so carefully petted, and the transfer of the same attention and manifestation from a similar motive to a child of the family is not, as a rule, a blessing to the new-made pet. The prospect is good for the introduction in time of a new breed of puppies more insufferable than their predecessors in domestic popularity, the pug and poodle.

A WOMAN'S LODGING HOUSE.

At a meeting on June 2d of the Ladies' Health Protective Association in this city, the Secretary, Mrs. Sarah C. Ostram, described a new institution, whose character and purpose will commend it to all who learn of its existence. The speaker designated it as "the only non-charitable cheap lodging house for women alone in the whole city of New York." This interesting establishment is at No. 6 Rivington Street. The building is new, fire-proof, and planned according to the best modern ideas. Its owner is a wealthy woman who refuses to divulge her name. The whole house is "as neat as wax ;" "anybody could occupy it," to use Mrs. Ostram's language. For fifteen cents a woman can secure a clean comfortable bed in a large, neat, well-kept dormitory. This sum entitles her also to the use of a small cupboard, in which she may lock up her effects. Twenty cents are charged for some of the more desirably situated beds in the dormitory—for instance, those nearest windows. The sum of thirty cents buys for one night the use of a sma'l room with one window. Inside rooms cost twenty-five cents per night. There is a pleasant sitting and reading room in the house where the women may read or sew. Several daily papers are provided for them, and an attempt was made, when the house was first started, to furnish them with books and magazines, but it had to be abandoned, because the literature vanished mysteriously. All needed facilities for washing and ironing clothes are supplied, but only a few women care to wash their clothes, and of these few only a small portion care to iron them. The only restriction placed upon the inmates is that they are prohibited from talking after they go to bed. Adjoining the lodging house is a restaurant, where for ten cents a breakfast can be had, consisting of a cup of coffee and a roll or two doughnuts, and a plate of hash or a stew. Women who wish to help their unfortunate sisters can procure at the house cards which they can give to applicants, who will then be cared for as may be directed upon the card.

THE NEW YORK ELEVATOR.

One of the marked characteristics of metropolitan development is the increased value that has been imparted to real estate by the use of the elevator. The city's expansion during the past decade has been vertical rather than lateral—to the obvious advantage of the community, socially as well as commercially. A recent issue of the *Pall Mall Gazette* says : "The overcrowding of London is one of the problems which fill philanthropists with despair. All efforts to surmount the difficulty by planting the people out in the country fail to do more than palliate the evil. Men and women must live near their work, and the result is that, despite all cheap trains, cheap trams and other contrivances for enabling Londoners to live in the suburbs, a densely packed population crowds our streets. Yet crowded as London is, there would be no difficulty in putting up on the same area as that occupied by the metropolis double the population if London were to be built upon principles which prevail in almost any of the large cities in America. London sprawls in unsightly fashion over twice the acreage that is necessary to accommodate her millions. London might be made twice as habitable as it is at present if we built high houses in place of the existing two-story cottages which lumber up so much available building space. The difficulty in the way is that in these high houses there is 'such a getting up-stairs;' and the Londoner has a strong objection to going up more stairs than he can help. This reluctance can only be overcome by providing him with

the means of ascending a high building as easily as he can step into the ground floor. In other words, London can be rebuilt upon its present area under more healthy conditions, so as to afford its denizens far more light and air and the amenities of life, provided the new London can be universally fitted with lifts. The lift, or elevator, is the key to the housing of the poor. The elevator is the answer of science to the bitter cry of outcast London." A moment's thought will suggest the influence that elevators have exerted in real estate values in a city hampered with the physical limitations that attach to New York. Elevators in five buildings in this city transport daily 67,000 people. More people are carried upon elevators in New York in a year than travel in a year over the underground railway in London. In New York the higher the building the higher the rent, so that rents have been directly influenced by elevators. The maximum speed of elevators in England is 300 feet a minute, while in New York 450 feet a minute is not uncommon. In London the elevator service is practically subservient to the staircase. Here the staircase in the high buildings is only incidental. The *British Architect* handles the subject without gloves. "The essential difference," it says, "at present existing between what we call buildings here and those which really are so in America is that the Americans have fully grasped the idea of the importance to the business man of getting quickly to his destination without the worry and exhaustion of personal physical exertion. They have realized, after their usual practical fashion, the unpleasant condition in which such a man is likely to find himself after toiling up four or five flights of stairs, and they have provided against the evil by giving him a quick, comfortable mode of ascent and descent. Not so in England, however. We still cling to our stairs and low-rented top stories as a national institution."

POISONS.

A POPULAR EXPLANATION FROM A SCIENTIFIC SOURCE.

In a lecture delivered March 16th, before the London Institution, on the subject of "What is a Poison," by Dr. Meymott Tidy, the learned speaker said that toxicology is the science of poisons. How comes it to be called toxicology? The Greek word from which it was derived meant a bow, and was used to signify not only the bow but also the arrows used with it. Dioscorides, in the first century, first used the term in connection with poison, which was at that time associated with the art of smearing the arrow heads used in warfare. Thus the meaning of the word tended to enlarge itself, trying, as words do, to keep pace with scientific progress. In that Greek word *toxon* was to be found not only the derivation but the early history of poisoning. A grim interest gathers round the history of poisoning. No doubt the first poison employed was that obtained from the snake. The subtle serpent first taught the art to man, but in those early days it was used in open warfare. But man grows wiser, and perhaps wickeder, and it was reserved for later times to taint the cup of friendship with the deadly venom. Was the suggestion too wild that if it had not been for the invention of more effective means of slaughter, the chemist would still have been called in to aid in the art of poisoning weapons? But if he had missed his chance in that respect, he could still look back to the early days of toxicology as the cradle of science. This art of poisoning arrows went back to quite pre-historic times. Mythological legends tell how Hercules dipped his arrows in poison to slay the Hydra, and how his jealous wife clothed him with the coat of Nessus, wherewith she vainly hoped to regain his affection, but only occasioned the sufferings which destroyed him. Strange it is to note how old is the knowledge of the poisonous nature of putrid blood, and of putrid animal fluids generally. This was recognized in very early times. The blood of a red-haired woman was regarded as especially poisonous. And up to almost recent times blood itself was thought to be poisonous. A king of Egypt was said to have been killed by drinking bullock's blood, and not more than a century and a half ago Blumenbach induced one of his students to drink the same, while he and his class stood by to watch the symptoms. The stories of Circe and Medea, of Drusilla and Locusta, of Tiberius and Nero, of Toffana and the Medicis, were tempting, but were not the subject of the lecture. He had to deal with the question, "What is a poison?" The law has not defined it, but the law frequently demands a definition from scientific witnesses. The popular definitions of a poison are none of them sound, much less scientific. He had searched every dictionary he could put his hands on and believed that the definition in every case amounted to this: That a poison is a drug which kills rapidly when administered in small quantities. But many poisons do neither the one nor the other. The terms "small quantity" and "rapidly" were about as definite as the classical piece of chalk. "Here," said the lecturer, holding up bottles containing nearly an ounce of each, "are oxalic acid and sugar of lead, in about the quantities necessary to be taken to make sure of a fatal result. But we should hardly call these small quantities. And yet these are certainly poisons. Moreover, many of the most certain poisons are very slow in their action. Dr. Tidy defined a poison as "any substance, otherwise than by the aid of heat or electricity, is capable of destroying life by chemical action on the tissues or by physiological action on the organs of the body. There's a good lot of it," he added, "but I can't get it into fewer words." Of course, he explained, mechanical means were excluded. You might kill yourself by swallowing pins, but pins were not poison. Nor is a substance a poison which destroys life by merely blocking out that which maintains life. Then he took two glass jars, one containing carbonic acid gas and the other nitrogen, and dipping a taper in each, showed that it was easily extinguished. "So would you go out," he said, "if you were introduced into either atmosphere. But the nitrogen is not a poison. With 20 per cent. of oxygen in it you can live quite easily; but neither 20 nor 40 nor 60 per cent. of oxygen would enable you to live in an atmosphere of carbonic acid gas, which is a poison." He proceeded to say that nature hates classification, but he must give illustrations of three classes of poison. First, he alluded to sulphuric acid, and showed a part of a stomach charred by the action of this poison. A caseful of stomach and other tissues was shown, illustrating the effects of various poisons, but time did not allow of these being explained. The charring effect of sulphuric acid was explained by the familiar experiment of pouring sulphuric acid on a thick solution of sugar, showing that the effect of the oil of vitriol was to abstract the water, and thus to cause the "charring." The stomach dies. That is molecular death, and this death soon extends to the rest of the body. Carbonic oxide furnished an illustration of a second class of poisoning. A bottle of this gas was lighted at the neck, and burned with a blue flame, "the same as that which you see just over your fire stoves. This gas is always present in coal gas to the amount of 5 or 6 or 7 per cent., and gives it its poisonous character. I don't think carbureted hydrogen burning in the gas jet is at all poisonous. I think all the poison is in the 5 or 6 per cent. of carbonic oxide. How does it destroy life? In this way: The active agent of our blood is the red coloring matter called hæmoglobin. This substance abounds in wonder. I think it is the most marvellous compound, chemically, with which we are acquainted. To live and thrive and flourish we must get albumen and albumenoids. We cannot form these ourselves, but the plant can. The power of building up albumenoid substances is limited to the plant laboratory. Man has the power to change one albumen into another. He can convert albumen into peptone, for example; he can break them up into albumen lower in the scale; but he cannot go higher—*with one exception.* That exception is hæmoglobin, the red coloring matter of the blood. This hæmoglobin, which comes on the scene through a stage opening of which we know not the whereabouts, has a strange property. As a rule, substances which combine with oxygen with the greatest difficulty can be separated from it with the greatest ease; and, conversely, substances which combine with it with great ease can be separated from it only with the greatest difficulty. Gold is one of the most difficultly oxidizable of bodies, and its oxide is most easily reducible. Potassium and sodium, on the other hand, combine with oxygen with the greatest ease, but it required the genius of a Humphrey Davy to separate them. Hæmoglobin is an exception in this respect also. It combines with and separates from oxygen with equal facility. The life of man depends on the perfection with which hæmoglobin performs its function as oxygen receiver, oxygen carrier and oxygen deliverer. But when a man takes carbonic oxide, hæmoglobin combines with this almost as easily as it does with oxygen, and, having taken it, the carriage is full; it cannot take up any oxygen. But, worse than that, it cannot get rid of the carbonic oxide; the carrier cannot unload. In scientific phraseology, the combination of hæmoglobin and carbonic oxide is a comparatively stable compound. The man dies because the sequence of oxidation is interrupted. "Strychnine was the third illustrative poison introduced. This poison was said to destroy life by physiological action. "And what do I mean," said the lecturer, "by physiological action? I mean just simply that I don't know what I mean. Not knowing how it acts, I use the phrase physiological action to conceal my ignorance. It would never do to say we did not know how drugs act, so we say it is a physiological action. But we know one thing about the action of strychnine. We can tell by means of the spectroscope that the fits resulting from the administration of strychnine coincide exactly with the abstraction of oxygen from its compound with hæmoglobin. Why it kills we do not know, and let me remark that it is one of the highest forms of knowledge to know exactly the limits of our knowledge. In fact, the term physiological action no more explains death by poisoning than the term catalysis explains fermentation." But can chemical investigation throw no light on the reason for the poisonous character of certain elements and certain compounds? Given that we know many facts about phosphorus for example—its atomic weight, its relations to the periodic law, its spectrum, and so on—ought we not to be able to foretell, in some degree, its action? This subject was studied first by Blake in 1841, and afterward by Rabuteau in 1867, and by other investigators. At first it was thought that the physiological activity of the elements increased the ratio of their atomic weights, but it was afterward noted that the reverse was the case in certain groups, and the end of the researches was the conclusion that neither in regard to elements nor compounds could any reliable rule be formulated. In inquiring into this subject further difficulties occur in the strange allotropic forms of certain elements and the isomerism of the organic compounds. Illustrations of these conditions were adduced in yellow and red phosphorus, the first of which, the lecturer said, would be fatal in 2-grain doses, while of the other an ounce might be taken without injury, as far as he knew. Ozone was another mysterious body. Every one knows that oxygen is the great life-preserver and life-sustainer. Ozone is oxygen in which three atoms are condensed into each molecule instead of two. But if you put a frog into ozone, into this condensed oxygen, it will soon close its eyes, its respiration will fall rapidly, and it will die simply for want of oxygen. As an illustration of isomeric bodies take these two substances, morphia and piperine, send them to a chemist for analysis, and his report will be that they are identical in composition; and yet the one is of all things in the world that which is most calculated to send one to sleep, and the other is of all things in

the world the compound to keep you awake. In ancient times the arts of witchcraft, medicine and poisoning were bound up together. The Greek word pharmakist was used to signify dispenser of medicines, a witch and a poisoner. One of the great services that science has rendered to mankind has been to separate these notions. The modern pharmacist no longer requires the stuffed crocodile to watch over his incantations, to aid in the composition of his medicines. And science has done more than this. It has rendered impossible the secret vilainies of the old poisoners. It follows the traces of secret treachery with a bloodhound scent, and will ultimately tend to repress entirely the crime of poisoning.

TONS OF CURRENCY.

COUNTING THE MONEY IN UNCLE SAM'S TREASURY.

The new treasurer of the United States has only recently finished counting out his money. It took some time, because it is no small job to reckon over 4,500 tons of coins; and this is apart from $300,000,000 or so in bank and treasury notes. For several weeks clerks were engaged in clinking the gold and silver which fill Uncle Sam's huge cash boxes, telling over the shining pieces, weighing them out and sealing them up in bags. One gets a notion of the magnitude of the task when it is considered that one of the vaults beneath the ground floor of the national treasure house, containing 85,000,000 silver dollars, is 100 feet long, 60 feet wide and 14 feet high—chock-full of coined precious metal. As you walk around this huge lattice-work box of iron and view its dimensions, you begin to realize the actual magnitude of so vast a sum. To empty the receptacle with a coal shovel would require many months of hard labor, if you had to do the work unaided. When the great French actress, Rachel, who had always been very poor, was suddenly placed in possession of a large heap of gold coins, she put them into a basin and poured them over her bare arms delightedly, with ecstatic enjoyment of a literal wash in wealth. You might fairly swim in gold and silver in these immense coffers at the treasury. There is another which contains $25,000,000 in gold and $60,000,000 of silver also. In counting these masses of silver and gold, each bag containing $1,000 is removed from the vault and first examined to see if the seal is intact. If so, it is placed upon scales and weighed. On one side of the balance are put one thousand unused dollars, and the sack must be found an equal counterpoise. Supposing that it is light, it is opened and the money in it is reckoned piece by piece. Coin suffers more or less loss of weight by abrasion, even when not in circulation, and it might be that a bag would be less heavy on this account, though having in it the required $1,000. Also when a seal has been disturbed the contents of the sack are poured out, stacked up, counted and put back again. The sacks which are opened are resealed; but ordinarily the seals are found all right and the weight is correct, in which case the bags are computed as representing so many thousands, and no further trouble is taken with any of them before putting them back into the vaults. When the gold is gone over, a particularly rigid inspection is exercised by the overseeing officials, because the value is so much the greater. It is a very interesting sight to watch the millions in paper money—bank notes, treasury notes and gold and silver certificates—being counted by deft-fingered young women in a big room beneath the treasurer's office. Every dollar has to be numbered before the new guardian of the national cash-box gives his receipt in full to the new out-going incumbent. The stuff is all kept, save such small change as is needed to transact Government business with, in the shape of packages, each about one foot cube, which are stored away on shelves in vaults. Cash in the shape of gold or silver takes up a great deal of room, but in bills enormous sums require very little space to hold them. One of the vaults, which is nothing more than a big safe about as large as an extra-size closet, alone contains $150,000,000. Each package holds four thousand notes, is done up in ordinary brown paper, and labelled on the outside in red figures with the amount enclosed. If it is a parcel of twenties, the bundle represents $80,000; if hundreds, $400,000. Just such a package was made up a few years ago that held $40,000,000 in gold certificates of $10,000 each. You could carry one like it under your arm very comfortably. The packages of notes are brought down on little trucks by the elevator from upstairs and wheeled into the room where the counting is done. They are brought by the assistant cashier in person, and the committee in charge of the reckoning receipts for every bundle. Each parcel is opened in its turn and the contents handed over to one of the skilled young women, who is responsible for it, and signs a guarantee of its correctness before it leaves her hands. She runs over the crisp, unused bills with fingers marvellously rapid, taking note not only as to whether there are four thousand of them enclosed, but also regarding the numbers on the notes themselves, which must run in regular order. If there is a number wrong, her practiced eye detects it swiftly; or, if a bill is defective in its printing, she removes it, and it is sent back to the Bureau of Engraving and Printing, to be replaced with another. When the bundle has thus been found correct, the notes are put under a hand-press for a moment to reduce them to the least possible bulk, a new wrapper of brown paper is put around them, and a seal with red wax completes the operation, at the conclusion of which a memorandum is made of the sum the package contains, and it is ready to be sent back to the vaults with its fellows. At the close of the last count that was made of the money in the treasury the cash was found $19 short, but the amount was subsequently swept out of the corners of one of the vaults in the shape of some stray silver coins. It is said that no deficiency of this sort has ever occurred save once, when the specie turned over to a new treasurer proved to be just three cents short, and the out-going official was obliged to make up the amount out of his own pocket. If it should ever happen that an unexpected hole in the assets was made by an embezzlement or otherwise, the treasurer would be responsible, but Congress would undoubtedly make it up for him by a special appropriation. It is hardly likely that such a thing can occur, however, inasmuch as things at the treasury are so arranged that not even the treasurer himself can possibly steal a dollar, nor yet the secretary of the treasury, nor the register, nor the cashier, nor anyone else, unless a conspiracy were organized. Furthermore, if anybody succeeded in breaking in from the outside, he could not very well get away with more than two hundred pounds of gold, which only represents about $50,000. A million dollars worth of that metal weighs one ton. This would be discouraging. Not long ago there were certain treasures of considerable value in the treasury, in the shape of articles made of gold and silver and precious stones, which had to be looked over and receipted for, as well as the money. Most of these things were presents which had been made to the various Presidents of the United States and to other officers of the Government by foreign powers and potentates, and which they could not accept on account of the existing law forbidding the reception of such favors. Among them was a bottle of attar of roses, given to President Grant by the imaum of Muscat, which held a pint of this valuable fluid; also a bottle of pearls, another bottle of diamonds, a gold sword scabbard, a diamond snuff-box, ten beautiful sabres from Ali Pacha, bey of Egypt, and lots of other such trifles. In old times the patent office was a sort of museum of curiosities, and these gifts and other valuables were deposited there. A large part of them were stolen twice, and on the occasion of the second robbery the thieves got away with pretty nearly all of them that were worth taking. They secured the bottle of pearls and the bottle of diamonds, as well as the diamond snuff-box, the scabbard of the gold sword and a number of medals Not even the pint bottle of attar of roses did they leave behind. This disaster occurred on the night of November 9, 1848, and on the following day a reward of $1,500 was offered for the capture of the goods and the burglars. The latter were traced to New York, where the treasures were recovered, although the precious articles of gold and silver had been melted down, after removing the gems with which they were set for pawning separately. Later on it was thought desirable to hand over the whole business to the care of the treasury, which was done in 1883. The collection remained in its hands for some years, until a while ago it was turned over to the National Museum. There were some curiosities among these valuables which are rather difficult to account for—for example, two Rio de la Plata dollars, a shotgun with gold mountings, seven gold coins from ancient Rome, a pair of pistols and a pearl necklace, There were ever so many medals of all sorts, in gold and silver. One box there was full of diamonds and pearls, which had been presented by the emperor of Japan to President Monroe. The gems were not of the very finest kind, being intended for the decoration of sword-hilts and purposes of that sort, but nevertheless they were worth a good deal of money. For years that box of jewels gave great annoyance to the officials at the treasury. Every time there was a count of the assets of that institution, President Monroe's casket would turn up, and eager Washington correspondents, with noses preternaturally alert for news would send out all over the country reports of the discovery in an odd corner of an unswept vault, of a box full of precious stones belonging to the family of Mr. Monroe. Whereupon, editorials would appear in papers opposed to the administration, condemning this neglect and demanding that the treasure be turned over to the indigent descendants of the author of the famous doctrine. Between whiles, charges would be printed to the effect that the pearls and diamonds in question, having been unheard of for some time, had presumably been distributed among the heelers of the wicked party in power. Congress never passed an act permitting Mr. Monroe to accept the gift in question, and so it was transferred to the National Museum, together with the rest. There were other valuables also given into the hands of the treasury which were captured and confiscated during the war. Among them were 240 watches, eighty-five chains, eleven rings, six lockets, one bracelet and one pair of compasses. Most of these were secured at one haul from the person of a Southern banker, with whom they had been deposited for safe keeping, He fled with them on his person, and was so unfortunate as to be caught. For a long time there were large stories current of the wealth in the possession of the Government got during the Rebellion. It was told how the ladies of Richmond, inspired by noble and patriotic motives, turned their jewels, watches and money into the Confederate treasury, piling up a vast amount of value there, and how the "swag," as vulgar burglars phrase it, was gobbled by the Union forces. But the fact was that the latter found no treasures of any sort to gobble in Richmond, and the heaps of riches in cash and collateral referred to were all imaginary.

LUMINOUS CRAYONS.—A luminous crayon has recently been invented to enable lecturers to draw on the blackboard when the room is darkened for the use of the lantern.

BLIND ECONOMY.—There is danger in going to the low-priced, cheap plumber to get work. It may not always be the case, but in most instances the low-priced man is a poor workman and a skinner. No one can have poor plumbing done at any price; he cannot afford to have it put in for nothing. There is economy in having good work done besides the security it affords in the matter of health. Pay a good plumber a good price and get good work should be the rule.—*Sanitary News.*

ARTIFICIAL COFFEE.

A SWEDISH SWINDLE, WITH HEAD-QUARTERS IN PHILADELPHIA.

"Lactoserin!" What is it? 'Tis an imitation of coffee—an excellent imitation, too—and it comes from Sweden. It looks like coffee and smells like coffee, but it isn't coffee, and consumers will, in the future, do well to look to what they are buying, as otherwise they may be made the victim of a remunerative Swedish "joke"—remunerative to the gentlemanly perpetrator in Sweden. The difference between genuine coffee and its Swedish imitation is very pronounced when the test is applied—the test of taste. The imitation looks like the genuine article, but does not taste like it. As soon as it is cracked by the teeth it resolves itself into small particles in the mouth. With a view to finding out something about the imitation, a reporter for the *Blade* called on Mr. Woolson, of the Woolson Spice Company, last evening, and asked him regarding it. "We have received several communications and samples of the 'coffee,'" said he, "but have paid no attention to them. The 'imitation' is, of course, a fraud—*i. e.*, so far as it being equal to genuine coffee is concerned—and it may for a little time interfere in some degree with the legitimate coffee trade. One of our men last week visited a regular customer and asked, as usual, for an order. The dealer told him he had bought coffee cheaper elsewhere and had made more money on it than he could on ours. Our agent wanted to see the coffee. After examining the package produced, and finding the contents to be a mixture, he purchased it, and here it is." The inventor of the "new coffee," Wm. Rehnstrom, of Stockholm, Sweden, some days ago wrote a letter, it is learned, to the Dowling Manufacturing Company of Philadelphia, in which he says he is glad his invention is getting on so well in the United States, and in which he declares it to be a merchandise just as good as it is valuable. He adds that by adding Lactoserin to coffee "we have values in millions. The production of coffee is limited—of Lactoserin unlimited, or the less coffee, add the more Lactoserin." The Dowling Manufacturing Company have a corner on the new merchandise, and are flooding the country with sample packages, and with each of which goes a letter announcing that their long negotiations with the representatives of Mr. William Rehnstrom, of Stockholm, Sweden, have been successfully concluded, and that henceforth the exclusive use in the United States rests with them for "Lactoserin" for and in combination with coffee. Here Mr. Woolson emptied the contents of the package on the table and leveled the pile. He then placed his hand on it, and raised it quickly. "You see," said he, with a smile of triumph, "that the genuine coffee of the mixture will stick to the palm, the imitation won't. They cannot put the gloss on the bogus article that beautifies the genuine." "Is the gloss put on coffee during the process of roasting it or afterwards?" "Afterwards. But to go on about 'Lactoserin,' it may be said that it is liable to become a dangerous article in the coffee trade unless steps are taken to regulate it. I do not think it can be suppressed at once, as its inventor, William Rehnstrom, of Stockholm, Sweden, has patents on it in this country. The berry of the imitation, you see, is much heavier than the genuine, but it lacks the gloss, and the crease is not like that of nature's production. The imitation will be manufactured at 10 cents per pound. A half pound of coffee at 25 cents and a half of 'Lactoserin' at 10 would make a pound of mixture worth 17½ cents. It would sell readily at 25 cents, as the people know nothing of the new article, and have been paying 27 cents a pound. and the profit to the seller would be 9½ cents. This is quite an item, when it is taken into consideration that there is very little, if anything, made on coffee by the retail dealer. The genuine article costs him 25⅞, and he grinds and sells it for 27. The temptation to make something will probably prove so strong that a good deal of 'Lactoserin' will be sold. In ground coffee it cannot easily be detected, as it has the color and odor of the genuine." "What do you think 'Lactoserin' is made of, Mr. Woolson?" "Probably musty flour, though I do not know. If it is made of flour, it is not dangerous, but it cannot be determined what its ingredients are. It may be a kind of clay." —*Toledo Blade.*

METHEGLIN AND MEAD.

ENGLISH BEVERAGES MADE OF HONEY.

As such large quantities of honey are now imported from North and South America and the West India Islands, besides our home productions (2,000 to 3,000 tons), it may perhaps be useful to give a few recipes for utilizing honey in some of our popular drinks. Our imports have averaged for the last four years 900 tons per annum. In food substances sugar has chiefly superseded honey. The subject of sparkling wine has already been discussed in previous volumes of the *Review*, in 1887 and 1888, but a little new matter on the subject may be added. The earliest manufactured kind of intoxicating liquid was probably mead. From honey a fermented beverage is made, which is largely used throughout the Soudan. Mead is said to have been the principal beverage of the Britons before the use of malt liquors among them; and long after the introduction of the latter beverages mead was a favorite drink. Under the name of metheglin it was frequently alluded to by old writers. Mead formed the ancient, and for centuries the favorite beverage of the northern nations. It is still called by the Germans honey-wine. Mead is frequently mentioned by Ossian. Dryden has a couplet:

"T'allay the strength and hardness of the wine,
Let with old Bacchus new Metheglin join."

Queen Elizabeth was so fond of mead as to have had it made for her every year. Mead formed the nectar of the Scandinavian nations, and was celebrated by their bards; it was the drink which they expected to quaff in heaven out of the skulls of their enemies, and was, as might be expected, liberally patronized on earth. The Scandinavian mead is flavored with primrose blossoms. In Spain mead is known as aloja. The Africans use several honey drinks, hives being common. In Madagascar they make a honey wine, a composition of three parts of water to one of honey, which they boil together and skim after it is reduced to three-fourths. They afterwards put it to ferment in large pots of black earth. This wine has a pleasant tartish taste, but is too luscious. In Abyssinia, according to Bruce, they use five or six quarts of water to one of honey. These they mix together in a jar, throw in a handful of parched barley meal and some chips of a bitter bark, which, in a few days, takes off the cloying taste of the honey and makes the beverage wholesome and palatable. Braggon, or Bragget, was a sort of metheglin. Hydromel is honey and water submitted to fermentation. Oxymel is a mixture of honey and vinegar. Here is a more modern recipe than Queen Elizabeth's for mead: 8 ozs. each of sarsaparilla, liquorice root, ginger, and cassia bark, 2 oz. of cloves and 3 oz. of coriander, suitably cut and bruised, are boiled for 15 minutes in 8 gals. of water, allowed to cool and settle, and then strained through flannel. To this is added in the fountain 1½ gall. syrup, ½ gall. honey, 4 ozs. each of tincture of ginger and solution of citric acid, and afterwards sufficient water to make 10 galls., when it is charged with carbonic acid gas. The following recipe for metheglin was published in the *Journal of Horticulture* by a Mr. J. Oliver, of Hartington, Derbyshire: When the comb has been drained of the honey, put it in a large vessel, then pour in sufficient lukewarm water to swim it nicely; let it stand two days, stir it occasionally, then strain it; skim the scum from the liquor carefully, filter the sediment through a flannel bag, then boil one hour. To 3 galls. add 2 lbs. of raisins, 1 oz. of ground ginger, and 7 or 8 laurel leaves, then cool. Add a little of brewers' barm, let it stand part of a day, then barrel it, leaving the barrel open for two or three days; then bung it up, and let it remain untouched for six months, then bottle it. I dare say some who try their hands at making this honey drink will be anxious to taste it before the expiration of the six months, but the longer it is kept the better it will be. If an egg will float on the liquor it will be about the right strength. Metheglin may of course be made from pure honey, but by soaking the combs in water we utilize the honey which would otherwise be lost. A little lump sugar put in each bottle will make it as fine as brandy.

Honey Wine is made of the juice of the best grapes, well ripened, and kept twenty days before pressing, to which five parts of the finest honey should be added, and all well stirred in a wooden vessel. Cover with a linen cloth, and allow to ferment for forty days, the scum being occasionally removed. It is then put in a light cask, and so kept till the ensuing spring, when it is bottled. The Jews in Morocco are very fond of Mahaya, a weak, colorless spirit, flavored with aniseed, which they prepare from water in which honeycombs have been boiled. The distillation of this spirit is conducted in the rudest manner. Dr. Leared in his work, "Morocco and the Moors," states having witnessed the process. The condenser consisted of an old gun-barrel, while the water into which the lower end was plunged, in order to cause condensation, was allowed to become too hot for the hand to bear.

Honey Currant Wine.—To 3 qts. of juice add 3 lbs. of honey and water to make a gallon; let it ferment four or five weeks with open bung, and keep the barrel always full, in a warm place; then drain and put into another barrel in the cellar. It makes a delicious drink.

Honey Noyeau.—4 ozs. of bitter almonds, 2 ozs. of sweet almonds, 2 lbs. of loaf sugar, 3 lemons, 2 qts. of gin, 2 large spoonfuls of clarified honey and 1 pint of milk. Blanch and pound the almonds, and mix them with the sugar, which should be rolled. Boil the milk, and when cold mix all the ingredients together, and let them stand ten days, shaking them every day. Filter the mixture through blotting paper, bottle off for use, and seal the corks down.

Cheap Harvest Drink.—To those engaged in harvesting and other occupations tending to create thirst, the following preparation may be recommended, which makes a very palatable and healthful drink in hot weather: Take 12 galls. of water, 20 lbs. of honey, and 6 eggs, using the whites only. Let these boil one hour, then add cinnamon, ginger, cloves, mace, and a little rosemary. When cold add one spoonful of yeast from the brewer; stir it well, and in twenty-four hours it will be good.—*London Mineral Water Trade Review.*

CARATS.

THE STANDARD OF FINENESS FOR GOLD AND DIAMONDS.

The word "carat" comes from the Abyssinian name for bean. It corresponds in weight with a certain species of East India bean, and was originally used only as a weight, in the same manner as our word "grain" comes from a grain of wheat, and has also its average weight. The exact relation of the carat to the grain. Troy weight, is, in round numbers, as 4.608 to 1.185; or, in other words, 1.185 carats are equal to 4.608 grains Troy. By division of the last number by the first we find for the weight of a carat 3.88 grains very nearly. The carat is the weight by which jewelers sell diamonds. The carat is now only used for weighing precious stones and pearls, because the grain is too small. In ancient times it was used as the unit of weight for gold, but it is now, on account of the greater abundance of that precious metal, superseded by the ounce. In regard to the alloy of gold, it has been accepted to take 24 carats of gold or 93 grains, very near, as the standard of pure gold, and to call gold in which 20

carats in 24 carats are pure gold, gold of 20 carats ; when three-fourths is pure, or 18 carats in 24 carats, it is called 18-carat gold. So, in regard to the alloy of gold, the word carat has become similar to the expression of a percentage, with the difference that 24 is substituted for 100. So 18-carat gold is identical to 75 per cent. fine ; 12-carat to 50 per cent. fine, etc. That this manner of estimating the value is kept up is simply due to the custom of following the duodecimal system in making alloys, which naturally drives us to the expressions 70, 80, or 90 per cent., when speaking of the fineness of the most valuable metals.

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

June.

MEAT.—Beef, lamb, mutton, ham, kidneys, liver, sausage, veal.

GAME AND POULTRY.—Pigeon, chicken, duck.

FISH.—Anchovy, bass, bluefish, blackfish, cod, eels, clams, flounder, haddock, halibut, herring, lobsters, mackerel, mussels, perch, porgie, prawn, salmon, shad, turtle, trout, sturgeon, whiting, weak-fish.

VEGETABLES.— Beans, cucumbers, carrots, cauliflower, lettuce, onions, parsley, parsnips, potatoes, shallots, spinach, turnips, radish, rhubarb.

FRUITS.— Cherries, strawberries., bananas, pineapples.

PRACTICAL RECIPES.

MEAT RISSOLES.—Take equal portions of tongue, ham and chicken or veal, and mince them up, season highly, adding a little cayenne pepper and a little lemon juice ; bind together with a beaten egg ; take off little pieces the size of a small walnut and lay them in little pieces of very thin paste ; fold over the edges and flatten them down, keeping the rissole as round as possible; dip them in egg and crumbs, and fry a nice brown in boiling lard.

PORTUGUESE SOUP.—Slice an onion into a pan and fry it in a piece of dripping the size of an egg ; add salt and pepper, and water enough to make a quart ; let it boil, then strain it and add a bouquet of herbs in which there is mint, and some slices of bread. Boil slowly until it is well flavored, then skim out the herbs and serve.

EGGS COOKED IN GRAVY.—Put some roast beef gravy in a frying-pan and poach your eggs in it. Have ready a heated platter with some slices of buttered toast in it; lay an egg on each slice and pour the gravy over all.

POTATO PANCAKES.—Peel your raw potatoes and grate them, season with salt, add a little flour, two or three eggs, according to the amount of grated potatoes used, and a little milk to make a good mixture ; form into little cakes with the hands, and fry in hot lard.

SARDINES ON TOAST.—Carefully scrape off the skin of the sardines and take out the backbone, sprinkle over them a little red pepper. Pour the oil in which they came into a small frying-pan and put the sardines back in it and allow them to get very hot, then lay them on small thin slices of hot toast and serve at once.

PIE-PLANT SHORT CAKE.—Make a short cake with a quart of flour in which is sifted two teaspoonfuls of baking powder and half a teaspoonful of salt ; rub in a heaping tablespoonful of butter and make the consistency of very soft biscuit dough with sweet milk. Bake in two cakes about three-quarters of an inch thick. When done split, and put a layer of pie-plant, stewed with considerable sugar, between the layers of crust and on top of them.

STRAWBERRY ICE.—Press enough ripe strawberries through a colander to make a quart of juice. To this put a quart of cold water and make it *very* sweet. When you put it in the freezer add the unbeaten whites of three eggs. Freeze and pack.

OLIVE OIL FRAUDS.

THE IMPORTED ARTICLE MADE OF PEANUTS AND SEEDS.

In a recent issue of the San Francisco *Argonaut* a letter was published from a gentleman of that city who, after graduating from the University of California, went to Europe for several years to study all that relates to the culture of the vine and the olive-tree, and the making and treatment of wine and oil, and has been in France and Italy for several years. In view of the growth of those industries in California, the following extract may interest some of our readers :

"MONTPELLIER, FRANCE, *April* 1891.

"One hears so much of the adulteration of almost all articles of daily consumption, that a few words about what I saw in this line may be of interest. While at Marseilles I visited the magnificent docks, and saw thousands of tons of peanuts and other grains from which oil is made. Great iron steamers were unloading heavy cargoes of these grains. Most of it came from Africa or Asia, where slave labor makes their production very cheap. The next day I visited some of the large oil-mills in the outskirts of Marseilles. Here I saw these peanuts, cotton-seeds, colza, sesame, etc., ground up and pressed. It was an interesting sight, I assure you ; but apart from the fine machinery in use, the names on the barrels of oil were of great wonder to me. Afterward, at Nice, the most important oil centre in the world—I found that among all the numberless oil merchants not more than *three* ever sell really pure olive-oil ! Leaving the warehouses and docks, I rode through the beautiful olive-covered country, and was astonished to see so many acres of magnificent olive-trees being cleared and planted in grass. Questioning the men, I found that the price of genuine olive-oil had been so reduced by competition with grain oils under the name of olive-oil, that the poor producers could not pay expenses, and were forced to uproot these grand old trees and plant something that could not be pirated by unscrupulous merchants. In other industries, the law compels every one to sail under his own colors. When the oleomargarine threatened to ruin all the buttermakers of France, the law compelled merchants to 'call a spade a spade.' Recently, plastered wine became omnipresent. The government put an end to plastering—not by forbidding it, but simply by compelling merchants to indicate the nature of the product they offered for sale. Needless to say, no one would buy plastered wine if they knew it as such. The reason that cotton-seed, peanut, etc., oils are allowed to be sold as 'pure olive-oil' is twofold. First, because the oil merchants are united against attempts to interfere with their trade ; second, because, up to very recently, it was almost impossible to detect mixtures of cotton-seed oil, etc., with the pure product of the olive. Recently, however, the much talked of difficulty in detecting falsifications has been sweept away by the discovery of a simple and cheap detective that gives infallible results. The Italians claim that it was Professor E. Bechi, of the royal station of Florence, who first discovered it. The French say that it is due to the labors of Mr. R. Brulé, director of the government station Agronomique de Nice. I do not wish to enter into the controversy. Suffice it to say the two methods differ but little, and great credit is due both gentlemen, for their discoveries were made, I believe, independently. I had occasion to pass several days in the government laboratory at Nice each time I passed through that city, and I made experiments with pure oil and mixtures. I was able to detect unmistakably five per cent. of cotton-seed oil in olive-oil and less than three per cent. of oleomargarine in butter—for it works even more perfectly with butter than with oil. Some day, when you have an hour to spare, you can do all the tests yourself. You need but a solution of nitrate of silver, twenty-five for one thousand in alcohol of wine at ninety-five degrees, a few test-tubes six inches long, and a basin of water kept at boiling point over an alcohol-lamp or stove of some sort. Put in one test-tube pure olive oil ; in another pure cotton-seed oil, and then make any mixture you choose. In each case use twelve cubic centimeters of the oil you wish to test and five cubic centimeters of the reactive. Put the tubes in the bath of boiling water and watch the results. You can do six or eight dozen at a time by numbering your test-tubes. The whole operation lasts but thirty minutes at most. Pure olive-oil, well made, remains clear and of a greenish tint. Cotton-seed oil turns black, and mixtures vary in color. Poorly made oil of the second pressure clouds up at first, but soon regains a greenish color. This test is *infallible*, and once seen never can lead to mistakes. When this discovery was first made known, the oil falsifiers took prompt steps to muzzle the press and buy off all who attempted to make it known generally. They were at first successful ; but, thanks to the outside press and the patient and determined efforts of a few people, the cat got out of the bag, and a great commotion ensued. Buyers of oil now demand Brulé's analysis, sworn to before the consul, before they will accept shipments. I know of one man who is making a great deal of money by offering, as an inducement, Brulé's analysis *free*, thereby proving the old saying that honesty is the best policy. If this crusade against falsifications continues to be as successful as it has been thus far, I have no doubt that the culture of the olive will regain its former importance, and the poor peasants will be once more happy, as they were before cotton-seed and peanuts gained the mastery. The grower of olives in California should be careful to fight the adulterators before they gain too much power. Steps should be taken to establish laboratories where consumers could have analyses made without trouble or expense. The slight cost of such stations would be paid for a hundred-fold by the increase in price of the pure article. Why should not Congress extend the oleomargarine law to oils, and compel various oils to sail under their own flags."

GRAVITATION.

ITS CHARACTER ONE OF THE SUBTLE MYSTERIES OF NATURE.

One of the brightest and most thoroughly informed writers on the staff of the *Electrical Review* of this city conceals his identity under the *nom de plume* of "The Prophet." In the issue of that journal of June 6th he presents the following suggestion relative to the mysterious force which we designate "gravity :"

What is electricity ? This question is often asked, but, strange to say, rarely with a view to obtaining information. It is frequently used as a poser to floor some loquacious person who has been talking glibly of the subject. One who attempts to answer it seriously is looked upon as presumptuous. But we really know more about electricity than we do about gravity. Every day throughout this broad land school children are giving to their teachers what is considered to be the correct answer to the question. What is gravity ? Yet the student who told his professor that he knew what electricity was, but had forgotten, has become the butt of a very trite joke. Of the true nature of the mysterious force of gravity little is known. The recent unparalleled advances in physical science leave us still in the dark as to gravity. It is the same silent, never-ending force which keeps the universe in balance. No

one has ever been able to screen its attractive effect for even one single second. Go where you will, you cannot escape its force. It causes a stone to fall and a balloon to rise. It makes rain, rivers and mountains, but of its exact nature we know infinitely less than we do of electricity. Who has ever heard of a wave of gravity, and who can tell the medium by which its power is transmitted from sun to earth? It has been proved that light and electricity are similar manifestations. Waves of light and electricity are now almost tangible every-day things. Electricity can be generated, propagated and suppressed at will, but gravity goes on, always acting, never changing, and successfully defying the power of man. Many of the actions which are now ascribed to gravity were formerly accounted for in a manner which seemed quite as reasonable as our present explanations. The ordinary suction pump, it is now known depends for its action upon the pressure exerted on a column of water by the air; but in the time of Aristotle it was explained by saying, "Nature abhors a vacuum." It was observed that space seemed always to be filled by matter, and the moment a solid body was removed its place would be filled by air or water. Thus, when the piston of a common pump was lifted, the water was caused to rise, and the explanation was all sufficient. It was not until the seventeenth century that the defect in this theory became apparent. The Duke of Tuscany sunk a very deep well and notwithstanding the skill of his best engineers, the water would not rise in the pump much over thirty feet. Galileo, who was then near the close of his career, was appealed to, but he, after remarking that nature did not abhor a vacuum over ten metres, referred the matter to his ablest pupil, Torricelli. The latter reasoned that if it was the weight of the air which sustained the water, that it ought to sustain a much shorter column of a heavier liquid like mercury. He accordingly inverted a long tube filled with mercury over a pan of that liquid, and found that the mercury fell until it came to rest at a height a little over thirty inches, leaving a vacuum at the top of the tube. This upset the Aristotelian doctrine that nature abhors a vacuum and prepared the way for the law of gravitation. We know many of the laws of gravity, but of the thing itself we know nothing. It may yet be proved that gravity is also an action propagated through the ether. It would thus come under the domain of electricity, which seems destined to absorb all of the sciences. Perhaps, then, when the great secrets of nature are unlocked we may be able to suspend or screen its action at will. This would be a most stupendous triumph of electricity. Until the scoffer can tell what gravity is, let him not ask "What is electricity?"

THE MATRIMONY BUSINESS.

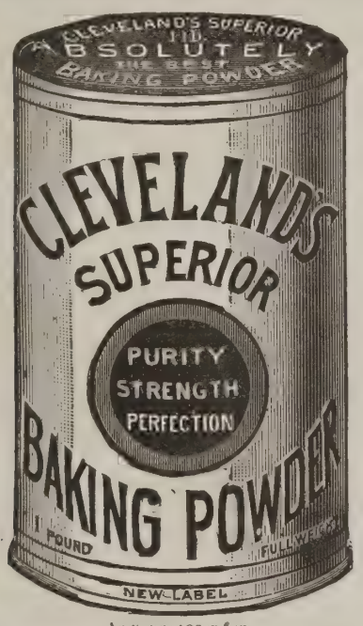
STATISTICS OF A EUROPEAN MATRIMONIAL BUREAU.

One of the noteworthy institutions of the German capital is the Great Berlin Marriage Bureau, which has ramifications all over the world, and which, it is reported, has in the last eleven years received 19 959 propositions from all civilized countries. In 12,706 cases husbands were desired; in 7,253, wives; in 4,916 women and 5,104 men communicated directly with the main office; the rest made known their wants through agencies. The youngest woman who asked for a man was 16 years and 4 months old; the eldest, 72. The corresponding ages of male applicants were 18½ and 79. The average age of the women was 26½; of the men, 29½. Matches were brought about for 4,399 women applicants and 5,417 men. The average fortune of the men was $3,750; of the women, $4,700. The smallest purse offered by a woman applicant was $75. It was the whole fortune of a girl of 21 years. The largest fortune of a woman applicant was $500,000. The properties of the men in search of wives varied between $375 and $150,000. There were 516 women and 307 men who communicated with the bureau who had apparent physical deformities. There were 2,311 and 1,409 women who had been married; 1,129 men wished second wives to take care of first wives' children. The occupations of the men were: Tradesmen, 5,002; members of learned professions and artists, 706; army officers, 93; State officials, 809. The rest of the candidates did not name their occupations. Of the women, 1,503 had their own business establishments. From the time of the offer of marriage to the date of the engagement, the average interval was 41 days. In 219 cases the marriage resulted in a speedy divorce, and 106 of the men and 143 of the women ran away without waiting for a legal separation. In 391 cases the bureau was brought into court in consequence of misunderstandings as to the dowries. These statistics comprise about one-half of the business of Berlin in the negotiation of marriages through agencies. A dozen small concerns devote themselves to the bringing together of matrimonially inclined men and women, mostly of the poorer and lower classes. Till recently, moreover, the big concert hall in the Leipziger Strasse gave every Thursday evening a matrimonial concert to which all mammas with eligible daughters were specially invited. On these evenings all the tables in the first story of the great house were occupied with family parties, whose plump and simpering daughters crochetted or knitted industriously throughout the entertainment, so as to show the eligible young Berliners present how capable they would be at housekeeping. In this musical marriage bureau, middle-class German girls went off like hot cakes; but no attempt was ever made to calculate the average number of engagements per evening, as the whole institution was merely an advertising appendage of a great musical resort. It is certain, however, that an astonishingly large percentage of the houses in Berlin and its immediate vicinity owe their existence to the interposition of the numerous matrimonial bureaus there. The figures most interesting to foreigners, especially to Americans, have unfortunately been omitted from the statement of the Great Berlin Bureau. Every boarding-house keeper knows, and most of them acknowledge it, that speculation in English-speaking women is the most considerable feeder of marriage agencies at the German capital. "Auf Amerikanerinnen wird besonders speculirt" is the familiar phrase which greets every inquirer into this branch of the business. American women travel much alone in Germany, and not a few of them live without the immediate protection of family or chaperons, in the large city boarding-houses. The German man always supposes that such an unprotected and unchaperoned American woman is an orphan with an independent fortune, or something equally good, and does not think long before making heroic efforts to encompass the possession of both heiress and property. Marriage brokers are constantly besieged with requests for introductions to such rich American orphans, particularly from insolent young officers, and it is not unlikely that at least eighty of the ninety-three officers mentioned by the Great Berlin Bureau made known their wants on the condition that only Americans need apply. The game between the agent and the boarding-house keeper is simple. He goes to her with the inquiry whether she has, or will have soon, young American women in her house. The answer is invariably affirmative, for every boarding-house keeper catches an American girl sooner or later. The agent then explains his errand, gives his military customer a gilt-edged title, character, and so on, and agrees to give the woman 33⅓ per cent. of his commission in case their united efforts accomplish the match in question. This commission is regulated according to the size of the American girl's dowry. A case without a dowry is not on record, for a dowry is the *sine qua non* of the whole affair. The housekeeper's duties are simply to find out all about the American girl's property and family, and are, therefore, not onerous, for she would exert herself to get this information for her own private satisfaction anyhow. If this course of inquiry elicit the fact that the American girl is a real American heiress, with real American gold to the amount of a thousand or more annually, the spick and span young officer, with his income of minus a thousand or more annually, is brought round in a whip-stich. He appears at dinner at the landlady's right, and is introduced as Herr Baron Bierfass, of the Guards, best friend of the Imperial Caretaker of the Boots. He is all red-and-blue, with sleek hair parted down the back of his neck, and a mustache pulled out straight to his ears. He talks German love as fast as a dog can trot, and, if he does not get the girl, it is because she does not love an officer of the Guards when she sees him. American mammas and papas are frequently dazzled by the great names in the letters of their daughters in Germany, and they palpitate with modest American pride when "Von Leberwurst" or "Von Schalkopf," with a "Lieutenant Herr Baron" or a "Hauptmann Herr Graf" before it, shines in the list of regular callers. A glance behind the scenes of the Great Berlin Bureau and other similar institutions of the Hohenzollern capital, with their wholesale trade speculation in the trans-Atlantic Nellies and Minnies and Lauras and Florences, would, however, probably in most cases result in the speedy termination of "daughters studying music or the language in Germany."

HEREDITARY TAINTS AND DISEASES.

The Biblical writer who enunciated the superb aphorism, "The fathers have eaten sour grapes and the children's teeth are set on edge," expressed in poetic form one of the greatest of physiologic truths. Parents transmit to their offspring all their physical, mental and moral peculiarities, and also their tendencies towards disease or general ill-health. In most cases the transmission is so complete that the same malady appears in the same form in both generations. This is true of scrofula, epilepsy, St. Vitus' dance, consumption, anemia, rheumatism, hare-lip, baldness, bad teeth, dyspepsia, leprosy and impure blood. In other cases Nature seems to try to alleviate the trouble, and make it less in the second generation. Thus gout and Bright's disease of the kidneys in the father become rheumatism and sometimes neuralgia in the children. Heart disease grows milder in its descent. Nervous prostration is transformed into sick headache. Blood diseases become scrofula; and so in every way Nature seems to do one of two things, either to slowly cure the disease or else to kill off the race which is afflicted The practical applications of this law are many and of high value. When a person is attacked with a disease that is inheritable, he will not transmit it to his children if he treats it in time and restores his system to a normal condition. If he be thoughtless, lazy or ignorant, and allows the malady to develop until it becomes chronic or constitutional, he will in every probability transmit it directly or in some modified form. In the latter case, he is throwing trouble, suffering and misery upon the innocent, and too often is sowing the seeds of death in the unborn. His children are sick after him, and worst of all, they have impaired constitutions, which often requires years to become sound and efficient. It is this condition which for lack of terms we call "lessened vitality," and lessened vitality in all cases bespeaks ill-health on the part of father, of mother or of both. While it is impossible to prevent the transmission of disease in some form, it is easy to reduce it to so small a factor as to be practically insignificant. As nearly all disease arises from impure blood, as it can be transmitted only by impure blood, and as it can reappear in a second generation only when the blood is impure the whole secret lies in the purification of the circulation of both parent and child If done in time by the former, it will increase to a vast extent the strength and healthfulness of the latter. Whether done in time or not, it is advisable to purify the blood of the offspring. This may be done in various ways,

but in only one which at the same time is certain, speedy, economical and thorough. A good method is a long stay at any hot springs, but this is slow and very expensive. The better way is using Ayer's Sarsaparilla until all the humors of the system are dispelled or destroyed, and both the circulation and the tissues are restored to perfect health. This preparation is a simple and agreeable combination of the most efficient alteratives known to physiology and chemistry. Its formula has been approved by the most eminent physicians. In its purification of the blood, it acts upon every vital function, strengthening those which are weak, stimulating those which are sluggish, and upbuilding those which are impaired. When used regularly by parents, healthy children are the invariable result. When used by sick or sickly offspring, disease and weakness disappear and health is soon restored.



As your grocer for

The Cleveland Cook Book,

(free), containing over 350 proved receipts. If he does not have it, send stamp and address to the Cleveland Baking Powder Co., 81 Fulton Street, New York, and a copy will be mailed you. Please mention this paper.

PISO'S CURE FOR
CURES WHERE ALL ELSE FAILS.
Best Cough Syrup. Tastes good. Use in time. Sold by druggists.
CONSUMPTION
25 CTS. 25 CTS.

Fine Table Wines

From our Celebrated Orleans Vineyard.

Producers of the

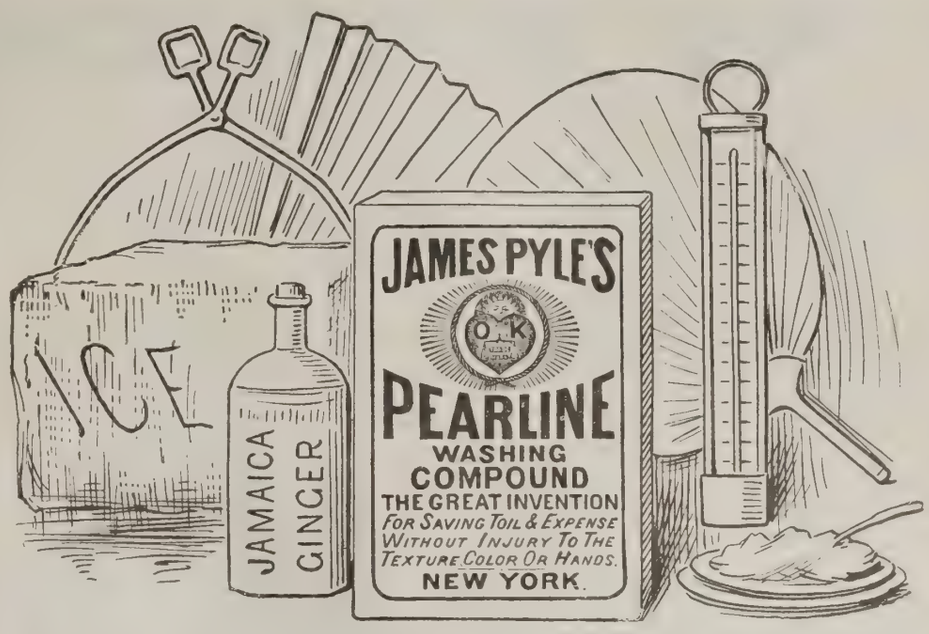
ECLIPSE CHAMPAGNE,

530 Washington St. SAN FRANCISCO.

Groad Barnsthy & Co.

GENERAL AGENCIES:

NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOS. H. R. PEEBLES' SONS CO. 73 West Fourth Street
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.



Hot Weather Necessities.

Notice the large square package in the front rank. That's where it belongs—ask any woman who has used it. See what it does. It saves work, saves strength, saves health, time, and temper. It saves wear and tear, too—and that's money. Delicate summer clothes don't have to be rubbed and wrenched when they're washed with *Pearline*. Everything is washed easily—and safely. *Pearline* doesn't *do* any more in warm weather than in cold, but you seem to *need* it more then. It's a necessity. But it's a luxury, as well. Try it in the bath, and you'll think so.

Beware of imitations. 193 JAMES PYLE, New York.

When used by both, a happy, healthy and hearty family bear testimony to the truth of the teachings of science.

BUSINESS NOTES.

HORSFORD'S ACID PHOSPHATE.

Ill effects of tobacco relieved by its use. Dr. F. Le Sieur Weir, Philadelphia, Pa., says: "In certain cases of skin diseases, where the stomach is in a condition unfavorable to the diseases, not infrequently have I found it to correct that condition, when nothing else yielded the desired result."

FIVE THOUSAND MILE RAILWAY.—The great Russian railway from Vladivostock, on the Pacific Ocean, through Siberia to St. Petersburg has been ordered, and operations begun. This road will be 4,810 miles long—with spurs, more than 5,000 miles in all. The cost is estimated at one hundred and sixty millions of dollars. It will open many regions rich in minerals and agricultural productions.

TEXTILE INDUSTRIES IN MAINE.—The capital invested in cotton manufactories in Maine is $15,292,078, and capital invested in Maine woollen manufactures $3,876,028—a total of 19,168,106. The cotton mills use 13,586 horse power water and 1,875 horse power steam—a total of 15,461 horse power—and the woollen mills 3,406 horse power water and 404 steam, amounting to 3,810 horse power—the total horse power for cotton and woollen being 19,271. The cotton mills employ 859.890 spindles and 22,698 looms, and the woollen mills 358 sets of cards and 1,577 looms. The product of the cotton mills aggregates 204,282,000 yards per year—equivalent to 116,069 miles of cloth. The value of the annual product is, for cotton, $13,319,363, and woollen $6,686,073—a total of $20,005,436. The cotton mills pay in wages $2,936,640, and the woollen $1,044,606—a total of $3.981,246. The cotton mills employ 11,759 hands, and the woollen mills 3,095—a total of 14,854 hands.

COTTON SEED SUGAR.—A sugar fifteen times sweeter than cane sugar, and twenty times sweeter than beet sugar, is reported by a German chemist from cotton-seed meal. It cannot be sold to compete with the ordinary article.

ALTERNATE CURRENTS.—Prof. Elihu Thompson finds in his experiments on the physiological effects of alternate currents that the danger of the current diminishes as the number of alternations per second is increased. Thus it took twenty times as strong a current to kill a dog when the alternations were 4,500 per second than when they were 120 per second. When the alternations were 300 per second the current was only half as dangerous to life as when the alternations were 120.

HE HEDGED.—Algernon: I've a widdle for you, Miss Miwanda. Why are childwen like tooth bwushes?

Miranda; I don't know. Why are they?

Algernon: Because evewybody pwefers his own. See?

Miranda (frigidly): No; I don't see. Not having any children ——

Algernon (stammeringly): Oh, of course not; but you-you-you have a tooth bwush, you know.—*Kate Field's Washington.*

BRIEF AND TO THE POINT.—A teacher in a suburban school, not long ago, gave her pupils twelve minutes in which to write an "abstract." A shoe was the subject selected by her, and the boys were to write in the first person. No limit as to the lines or words was given them. Most of the boys wrote—and erased. during the whole time allotted, but the teacher noticed one fellow who sat idle until the time was within two minutes of expiring. As the scholars filed out, she said to him: "Brown, did you finish your abstract?" "Yes, ma'am," he answered. Curious to see what he could have written in so short a time, she looked over the papers and found this: "I am a worn-out shoe; my coffin is the ash-barrel; my grave, the dump." She says that almost as firmly impressed on her memory as this remarkable composition is the expression of amazement on the boy's face the next morning, when he saw the "100" mark on his paper.

WATCHES.

EVERY one wants a watch, and naturally a good watch that keeps accurate time, presents a handsome appearance, and is inexpensive. If such a watch can be found of American manufacture, it is an additional appeal to our patriotism. Just such a watch as this ideal THE ANALYST PUBLISHING COMPANY is enabled to offer as a Premium to its readers. Having some large advertising contracts we have been enabled to procure the movements of the manufacture of the best known American watch factories, namely, the Waltham, Elgin, Hampden and Illinois Watch Companies. These movements are adapted for both ladies' and gentlemen's watches, and are warranted by the makers. These movements have seven jewels, patent lever movement, chronometer balance, patent safety pinion, sunk hard-enameled dial, straight line visible palette, stem winders, hand set; in fact, contain all the latest improvements and can be readily cleaned or repaired by any ordinary good watchmaker. They can be regulated to run as close as any movement.



It is needless to say that to case these movements in solid gold cases would make them too expensive, yet they are cased in what are known as gold filled or stiffened "Ladd" cases, and are warranted to be 14 karat gold, made from two sheets of 14 karat gold overlaying fine composition metal, with regular jointed caps, covers and bezels, and to wear at least five years. They are not plated, nor rolled gold, but actual 14 karat gold cases, thin of course, but stiffened and strengthened by being filled with this fine composition metal. They are finished in the same manner, engine turned and engraved as solid gold watches, and wear and look just the same. No one but an expert can tell them from a solid gold watch. These watches are made both open face and hunting case style, in gentlemen's or ladies' sizes. For gentlemen we recommend plain engine-turned cases; for ladies, a handsomely engraved case.

How to Obtain One of these Watches.

These watches are not to be purchased from us at any price. Send us a club of 25 subscribers to the AMERICAN ANALYST, and $25, the regular subscription price, and one of these watches (your choice of style and size) will be immediately forwarded, post-paid and registered, to your address. You need not wait until you have your 25 subscribers all together, but forward them as you get them and they will be credited to you, and when the number is complete the watch will be sent. A subscription for two or three years will be counted as two or three subscribers.

As these watches are retailed by jewelers at not less than $25, it will be seen that we are offering a real premium with the sole object of increasing our circulation, and that by taking advantage of our offer any one can obtain a good, reliable and handsome watch without cost. As the number of these watches at this price is limited, it is advisable to take steps at once to procure a bargain.

THE ANALYST PUBLISHING CO., 19 PARK PLACE, NEW YORK.

A VALUABLE BOOK FOR NOTHING.

The AMERICAN ANALYST will send to any person who will forward a New Subscription with One Dollar, a copy of

THE FAMILY CYCLOPÆDIA OF USEFUL KNOWLEDGE.

This is unquestionably one of the most interesting, entertaining and instructive books ever published. It is a universal educator for every member of the family circle, filled with useful information from beginning to end, and this information is given in such an attractive and pleasing way that the book is quite as entertaining as it is instructive. It treats of hundreds of subjects of which no man, woman or child who seeks to be well informed can afford to be ignorant, yet of which the masses of people are entirely unlearned. It contains the cream or substance of a dozen ordinary volumes, and is one of the most valuable and useful books a family can have in the house. No living man is so well informed that he may not learn from it. It is a book for the masses, for old and young, rich and poor, and will be read with pleasure and profit by all. It will likewise be found of great value as a work of reference. The book is profusely and elegantly illustrated, and is conveniently divided into departments, as follows: ***Biography, History, Natural History, Travels, Manners and Customs, etc.; The World Illustrated, Useful Arts and Manufactures, Trees, Plants, Fruits, etc.; Great Inventions, Mining, Wonders of the Sea, Familiar Science, Law for the Masses, Statistical and Miscellaneous.*** All the above subjects are fully and ably treated in this valuable book. It is a vast storehouse of useful and entertaining knowledge—unquestionably one of the best and most valuable books ever published in any land or language. No cyclopædia ever heretofore published at twice the cost is to be compared with this book in point of artistic make-up, beauty, and excellence of illustration, and quality of contents. As a holiday or birthday present for any one, nothing more appropriate or acceptable could possibly be selected. THE FAMILY CYCLOPÆDIA OF USEFUL KNOWLEDGE is a large and handsome book of 544 pages, 12mo, printed upon fine paper and elegantly bound in cloth, embellished with artistic designs in black and gold. It contains ***Two Hundred and Seventy-three Beautiful Illustrations,*** the original cost of which was over $5,000. The book will be sent by mail, post-paid, to any person sending a ***New Subscription with One Dollar.*** It is as large and handsomely gotten up as books usually sold at $1.50 and $2.00, and in the quality of its contents is worth a dozen ordinary volumes.

ADDRESS ANALYST PUBLISHING CO.,

19 PARK PLACE, NEW YORK.

HOSMER, CRAMPTON & HAMMOND,

NO. 43 COMMERCIAL STREET,

BOSTON.

COMMISSION MERCHANTS,

HAY, STRAW, FLOUR & GRAIN.

E. B. HOSMER, G. W. CRAMPTON, BENJAMIN HAMMOND, A. L. ROBINSON.

BOSTON HAY AND STRAW MARKET.

Hay, choice to fancy, in large bales	$15.00 to $15.50
Hay, choice to fancy, perpetual pressed bales	14.00 to 15.00
Hay, fair to good	13.00 to 14.00
Hay, poor to ordinary	11.00 to 12.00
Hay, Clover and Clover mixed	10.00 to 12.00
Hay, swale	8.50 to 9.00
Straw, Rye, good to prime	17.50 to 18.00
Straw, Oat	8.00 to

BOSTON, June 6, 1891.

Receipts for the week are 328 cars of Hay and 28 cars of Straw; corresponding week last year, 203 cars of Hay and 25 cars of Straw. The receipts of hay are quite liberal, but there has been a fair demand, and there is no accumulation of stocks. Some cars of strictly fancy hay in large bales are selling at $16.00, but such are exceptional.

Rye straw is steady with some choice cars selling at $18.50. Very little demand for oat, wheat or machine threshed rye straw.

H. F. WILSON,
WIRE BALE TIES,
458 WEST 38th STREET, New York.



THE LABORATORY.

To Inventors, Manufacturers and Applicants for Patents

The AMERICAN ANALYST may be consulted upon all matters involving theoretical or applied chemistry. Advice and opinions given. Analyses and assays made. Patents perfected and secured. Terms reasonable.

Address, AMERICAN ANALYST,
10 Park Place, N. Y.

THE ORIGINAL AND GENUINE
(WORCESTERSHIRE SAUCE).



LEA & PERRINS' SAUCE

In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—

Lea & Perrins

Beware of Imitations; see that you get Lea & Perrins'

For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS, NEW YORK.

Tabasco Pepper Sauce

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

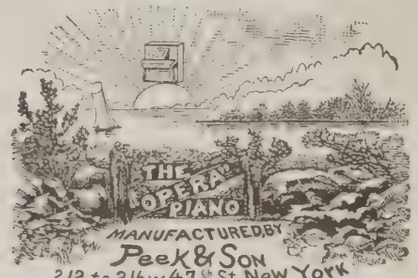
The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced, by connoisseurs, to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY,
NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

HARTSHORN'S SELF-ACTING SHADE ROLLERS

NOTICE SCRIPT NAME OF Stewart Hartshorn ON LABEL, AND GET THE GENUINE HARTSHORN



A HIGH-GRADE PIANO

AT A VERY MODERATE PRICE.

NEW DESIGNS. FANCY WOODS.

Terms Easy. + Monthly Instalments.

TWO, THREE AND FOUR PEDALS.

Catalogues, Prices, Terms, Etc., sent to any address.

EVERY PIANO WARRANTED 5 YEARS.

(Mention this Paper.)

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,

HOWARD STREET, BOSTON, MASS.

GOLD MEDAL, PARIS 1878.



W. BAKER & Co.'s Breakfast Cocoa

from which the excess of oil has been removed,

Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

"BILLET"

are

Carefully Selected French Sardines, Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS.

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

BROMO SODA.

Useful in Nervous Headache, Sleeplessness, Excessive Study, Over Brainwork, Nervous Debility, Mania, Etc.

DOSE—A heaping teaspoonful in half a glass of water, to be repeated once after an interval of thirty minutes, if necessary. Each teaspoonful contains 30 grs. BROMIDE SODIUM and 1 gr. CAFFEIN,



SUPPLIED BY ALL DRUGGISTS

Ask for (Bromo-Soda, Warner & Co.) and take no other "Bromo."

RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,
184 Greenwich St., N. Y.

HAMMOND'S
CELEBRATED
Calumet Oleomargarine

Strictly pure, cheap and healthful.
Ask your grocer for it.
Put up in packages of all sizes, also prints and rolls.

G. H. HAMMOND CO.,
607 to 615 THE ROOKERY,
CHICAGO.

Also offices at Boston, South Omaha, Neb., and Hammond, Ind.

BLAIR'S PILLS.



Great English Remedy for GOUT, RHEUMATISM and KIDNEY COMPLAINTS.
SURE, PROMPT and EFFECTIVE.
Large Box, 34; Small, 14 Pills.
At all Druggists, and
224 WILLIAM STREET, NEW YORK.

Pure LAGER BEER,
"IMPERIAL" and "CULMBACHER"
Brewed & Bottled
SPECIALLY FOR
HOTELS, CLUBS
AND
PRIVATE FAMILIES
BY
Beadleston & Woerz
291 W. 10th St. New York.
Orders by Postal Card promptly attended to.

SWIFT'S
CHOICE
Chicago Dressed Beef
AND
MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,
UNION STOCK YARDS,
CHICAGO, ILLS.

ESTABLISHED IN LONDON, 1831.
DEAN'S
PATENT
Ardenter Mustard



W. G. DEAN & SON,
361 & 363 WASHINGTON STREET; 84, 86, & 88 NORTH MOORE STREET, N.Y.

We can save you Fifty Dollars when you Build. Send 4c. for complete set of Plans to build from, simply state about price of dwelling desired. 25 cts. in stamps. Our book "Beautiful Homes." 25 cts. Our monthly book "The National Builder," 25 cts. Address



The National Builder, Adams Exp. Bldg., Chicago, Ill.

Subscription $1.00 per year. Now is the time to subscribe.

THE GREAT AMERICAN TEA COMPANY

LADIES

GET UP ORDERS.
Entire New Departure.
A HANDSOME PRESENT TO EVERY SUBSCRIBER.
THE GREATEST INDUCEMENTS
EVER KNOWN TO INTRODUCE OUR NEW GOODS.

If you enjoy a cup of **Delicious Tea** send in your orders. 3½ lbs. Fine Tea by mail on receipt of $2 and this "ad". Beautiful premiums given away with $5 orders and upwards. The **most extraordinary bargains** ever offered, during the next thirty days. China Tea Sets and Lamps with $10, $15 and $20 orders to introduce our excellent **New Crop Teas.** Formosa and Amoy, Oolong, Congou, English Breakfast, Japan, Imperial, Young Hyson, Gunpowder, Sun Sun Chop and Mixed. Good mixed teas 20c. per lb. Headquarters in United States for Fine Teas. One pound of our tea will go farther than three pounds of trash. Thirty years' national reputation for selling **Pure Goods Only.**

THE GREAT AMERICAN TEA COMPANY,
P. O. BOX 289. 31 and 33 Vesey Street, New York.

We shall be glad to supply our readers with any periodical published at club rates.

Send us a postal naming periodical and we will quote you prices.

ANALYST PUBLISHING CO.,
19 Park Place, New York.

INSTRUCTIONS TO SUBSCRIBERS.

The **Names of all Subscribers** are registered as soon as received, and paper is always promptly forwarded.

Postage.—The postage to all parts of the United States and Canada is paid by the publisher.

Remittances of small sums may be made with comparative safety in ordinary letters. Sums of one dollar or more must be sent by registered letter or P. O. money order, otherwise we cannot be responsible for same. Silver must not be sent in a letter.

Postage Stamps will be received for the fractional part of a dollar, and in any amount when it is impossible for patrons to procure bills, but you must send one or two-cent stamps only.

SUBSCRIPTIONS.—The AMERICAN ANALYST will be sent one year to any subscriber for ONE DOLLAR. New subscriptions can begin at any time.

We Stop the Paper at the expiration of the time paid for unless a renewal of subscription is received. Those whose subscriptions have expired must not expect to continue to receive the paper unless they send the money to pay for it.

Change of Address.—Subscribers wishing their addresses changed must invariably give their former as well as new address.

Missing Numbers.—It occasionally happens that numbers of our paper sent to subscribers are lost or stolen in the mails. In case you do not receive any number when due, write us a postal card and we will cheerfully forward a duplicate of the missing number.

Most Important of All.—In every letter that you write us, never fail to give your full address, plainly written—name, post-office, County and State.

Address all letters to

THE ANALYST PUBLISHING CO.,
19 Park Place, New York.

GRAND PREMIUM OFFER!

A SET OF THE

WORKS OF CHARLES DICKENS,

In Twelve Large Volumes,

Which we Offer with a Year's Subscription to this Paper for a Trifle More than Our Regular Subscription Price.



CHARLES DICKENS.

Wishing to largely increase the circulation of this paper during the next six months, we have made arrangements with a New York publishing house whereby we are enabled to offer as a premium to our subscribers a **Set of the Works of Charles Dickens, in Twelve Large and Handsome Volumes,** with a year's subscription to this paper, for a trifle more than our regular subscription price. Our great offer to subscribers eclipses any ever heretofore made. Charles Dickens was the greatest novelist who ever lived. No author before or since his time has won the fame that he achieved, and his works are even more popular to-day than during his lifetime. They abound in wit, humor, pathos, masterly delineation of character, vivid descriptions of places and incidents, thrilling and skillfully wrought plots. Each book is intensely interesting. No home should be without a set of these great and remarkable works. Not to have read them is to be far behind the age in which we live. The set of Dickens' works which we offer as a premium to our subscribers is handsomely printed from entirely new plates, with new type. The twelve volumes contain the following world-famous works, each one of which is published *complete, unchanged, and absolutely unabridged:*

DAVID COPPERFIELD,
MARTIN CHUZZLEWIT,
NICHOLAS NICKELBY,
DOMBEY AND SON,
BLEAK HOUSE,
LITTLE DORRIT,
OUR MUTUAL FRIEND,
PICKWICK PAPERS,
BARNABY RUDGE AND CHRISTMAS STORIES,
OLIVER TWIST AND GREAT EXPECTATIONS,
THE OLD CURIOSITY SHOP AND THE UNCOMMERCIAL TRAVELER,
A TALE OF TWO CITIES, HARD TIMES AND THE MYSTERY OF EDWIN DROOD.

The above are without question the most famous novels that were ever written. For a quarter of a century they have been celebrated in every nook and corner of the civilized world. Yet there are thousands of homes in America not yet supplied with a set of Dickens, the usual high cost of the books preventing people in moderate circumstances from enjoying this luxury. But now, owing to the use of modern improved printing, folding and stitching machinery, the extremely low price of white paper, and the great competition in the book trade, we are enabled to offer to our subscribers and readers a set of Dickens' works at a price which all can afford to pay. Every home in the land may now be supplied with a set of the great author's works.

GLENN'S SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,

C. N. CRITTENTON,
115 FULTON STREET,
NEW YORK.

Be progressive and keep abreast of the times. Avoid dyspepsia by using **Lard Compound** and **Cottolene,** a substitute for lard.

The highest medical authorities pronounce them healthful; and expert cooks commend them.

Our **Clairette** brand of cotton oil soap is the purest and best laundry soap in the market; as pleasant to the hands as genuine castile.

N. K. FAIRBANK & CO.,
CHICAGO AND ST. LOUIS.

OUR GREAT OFFER

TO SUBSCRIBERS

TO THE

AMERICAN ANALYST.

We will send the **ENTIRE SET OF DICKENS' WORKS,** *in* **TWELVE VOLUMES,** *as here described, all postage prepaid by ourselves, also* **THE AMERICAN ANALYST** *for* **ONE YEAR,** *upon receipt of* **$1.50,** *which is only* **50** *cents more than the regular subscription price of this paper.* Our readers, therefore, practically get a set of Dickens' works in twelve volumes for only **50** cents. This is the grandest premium ever offered. Up to this time a set of Dickens' works has usually been $10.00 or more. Tell all your friends that they can get a set of Dickens' works in twelve volumes, with a year's subscription to **THE AMERICAN ANALYST** for only **$1.50.** Subscribe now and get this great premium. If your subscription has not yet expired, it will make no difference, for it will be extended one year from date of expiration. We will also give a set of Dickens', as above, free and post-paid, to any one sending us a club of three yearly subscribers.

ADDRESS:

THE ANALYST PUBLISHING CO.
No. 19 PARK PLACE,
NEW YORK.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 25. NEW YORK, THURSDAY, JUNE 18, 1891. WHOLE No. 225

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - - $1 per year.
Single Copies, - - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.

Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.

Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,

H. LASSING, M. D., } Editors.
T. P. McELRATH, }

No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to

THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

American Names 294
City Flowers 292
Death Valley 290
Dictionary Lore 294
Domestic Dietetics 293
Editorials 289
Discountenancing Bachelors; The Doubt Strengthened; Practical Philanthropy; Unconscious Suggestion; Women as Architects.
Imperial Dinners 293
Land Navigation 292
Minute Organisms 291

DISCOUNTENANCING BACHELORS.

As a sort of corollary to the description of the Berlin Marriage Bureau, published in our last issue, it is interesting to note that a bill to abolish bachelorhood among state officials will be laid before the German Reichstag shortly. The explanatory and argumentative "motive" such as accompanies all bills before the Parliament of Berlin, will be, in this case, substantially as follows: "In the interest of unmarried women, the Government is under obligations to take measures for the suppression of bachelorhood, especially in view of the fact that German women are not admitted to places in the departments which were formerly open to them. The principle of the necessary marriage law must be that every official of certain grades must marry or sacrifice one-fourth of his salary and all his house money. The money collected by the infliction of these penalties should be made a pension fund for unmarried daughters of Government officials. An exception to the rule might be made in the case of officials who had parents or sisters to support. Thus, many women who would otherwise remain spinsters would be cared for and their aims in life would be reached, while to many who found no chance to marry, a comfortable old age would be assured." The agitation in favor of this measure is helped along by several societies of women in Berlin, Munich, and Frankfort.

THE DOUBT STRENGTHENED.

Our esteemed contemporary, the *New England Grocer*, in its issue of June 5, refers with exceeding bitterness to some comments the AMERICAN ANALYST recently made regarding the projected scheme of the retail grocers in this city for advertising themselves and their wares under the lofty pretext of a permanent "Pure Food" exhibition. Our contemporary should not, we think, wax so wroth, for our remarks were penned in the most amicable spirit imaginable. He should bear in mind that it was he himself who first raised the question whether a man "can keep a grocery store and be a Christian." In attempting to answer his query we did not deny the possibility of such a desirable combination of practical qualities and spiritual gifts, notwithstanding the shadow of dubiousness with which he had invested the notion by the mere fact of starting the inquiry. We simply suggested that there might be localities in which the public would perhaps have its doubts on the subject—such localities, for instance, as those in which "Pure Food" exhibition humbugs are organized as money making advertising ventures. But our contemporary seems to have been so "riled" by our remarks as to have been blinded respecting their meaning. Thus he accuses us of having charged the New York grocer with lack of cleanliness—an accusation which we emphatically repudiate. We said that as a class he is not, as is proverbially alleged of cleanliness, in close proximity to godliness. Perhaps in this degenerate generation, when heresy is rampant on every side, our contemporary regards any deviation from the straight path of orthodoxy as unclean, and in that way misinterprets our meaning. It simply affords a fresh illustration of how the best and wisest of us may err when we permit our prejudices to get the better of our judgment. But it is as a lexicographer that our esteemed contemporary makes the worst showing. We asserted, and we at least had reason on our side, that the borrowing for the grocers' advertising scheme of the English name "Healtheries" suggested that English dudism was acquiring "such a hold upon the community that it must find vent through the grocery store." The *N. E. Grocer* objects to this, and says we "forget that the very essence of dudeism is the use of big words instead of simpler forms of speech." If that is not a corroboration of our assertion we fail to understand it. But our contemporary is wrong here too in his definition. The word "dude" does not appear in any of our English lexicons except the *Century Dictionary*, where it stands thus:

Dude.—A slang term, said to have originated in London, England. * * * A fop or exquisite, characterized by affected refinements of dress, speech, manners and gait, and a serious mien. * * *

Dudism.—The dress, manners and social proclivities of the class known as dudes.

Manifestly the "very essence of dudeism" is not "the use of big words," but is a combination of affectation, humbuggery and deceit, such as is fairly illustrated by the use of the word "Healtheries" in the relationship referred to above. We have no desire to engage in controversy, particularly with so esteemed a contemporary as the *N. E. Grocer*, but appreciating his sense of justice, we have taken the occasion to point out some of the misstatements into which he has been unwittingly misled by his eager zeal on behalf of the trade he so ably represents. If space permitted we could point out several more of his blunders, but to our readers the task would be superfluous. One point, however, we cannot in fairness overlook. The *N. E. Grocer* emphasizes with especial severity our suggestion that the commodities in which the retail grocers deal are sometimes sophisticated—a circumstance which the poet Longfellow doubtless had in mind, when he declared in his "Song of Life," that "things are not what they seem." It would take too much space to enter into this branch of the discussion exhaustively. We will content ourselves at present with reproducing the following brief extracts from two of our valued exchanges:

N. E. Grocer: The difficulty is with the out of the State manufacturers. We believe the State authorities should notify the grocers that the goods are impure, and not prosecute unless the grocers continue to sell after having been so notified. We believe that if there are manufacturers in this State who sell adulterated goods, they ought to be made to suffer, and not the retailer of these goods.

N. E. Grocer: Grocers feel that it is unjust to fine them for selling adulterated food stuffs. * * * The grocers add that they take as great precautions as possible to protect themselves and customers, but the people demand cheapness, and cheapness and excellence of quality do not obtain together. There is, it must be admitted, considerable merit in the grocers' plea.

The N. Y. Voice (temperance organ): The discoveries of the sanitary police are only partly divulged, but the facts published are enough to justify an occasional wish to limit our diet to articles that are sold in the "original packages" of nature, like apples, eggs and potatoes. Half the lard and three-fourths of the butter sold in the markets of our chief cities are not what they seem; most of our bottled honey is glucose flavored with aromatic extracts and wax emulsions; ground pepper and ground coffee, mustard and tea are mixed with surrogates too numerous to mention; but all those things are trifles compared with the abominations of the milk traffic.

PRACTICAL PHILANTHROPY.

The scheme of social amelioration is being variously experimented upon by the philanthropists and charity workers of this metropolis. One of the latest projects of this character, and one that promises well, is an organization founded by a number of well-known gentlemen who have just organized a society, whose object shall be, its constitution says: "To bring men and women of education into closer relations with the laboring classes, for their mutual benefit." The University Settlement Society is the name of the organization. It is proposed that college men shall retain the control of the society, although its membership and management will not be limited to collegians. The society is going to establish in the tenement house districts places of residence for college men and others who desire to take a hand in the work, with rooms where the people of the neighborhood may meet for social and educational purposes. These places are to be called settlements. Some of the men who belong to the society are Felix Adler, Charles S. Fairchild, Richard Watson Gilder, Henry Holt, Brayton Ives, Seth Low, Oswald Ottendorfer, Elihu Root, and Carl Schurz. James W. Alexander is the President, A. C. Bernheim, Treasurer, and J B. Gilder, Secretary. For some time the Neighborhood Guild has been working in this city. Its objects are similar to those of the new society. It has a house in a thickly settled district and its workers are college-bred men. About 250 people of the neighborhood regularly visit the house, and 100 more, not members of the Guild, attend lectures The house has also served as a residence for three or four workers who have regularly visited among the neighbors, and performed various friendly offices for them. During the past year a similar work has been carried on in this city by graduates of Vassar, Wellesley, and other women's colleges, with like success. "It has been demonstrated," says a circular issued by the University Settlement Society, "that educated men and women, living and working among the poor, associating with them as equals, but introducing into the tenement house all that trained intelligence and friendly sympathy can give, can make themselves a most efficient means of bettering and elevating the mental, moral, and physical condition of the people."

UNCONSCIOUS SUGGESTION.

It is by no means a new theory that a man and woman who have been married a great many years grow to resemble each other, not only in manner and voice, but actually as to features and expression. A recent number of the *Illustrirte Welt* has an article on this subject, which states that the photographic association of Geneva has quite lately been investigating the truth of this theory by the aid of the camera. The photographs of seventy-eight elderly or very old married couples were taken, and an equal number of family groups. The result proved quite satisfactory to holders of this theory, inasmuch as in twenty-four cases the resemblance between husband and wife was much greater than that between brother and sister, and in thirty cases more it was fully as great. The failure of the other twenty-four old couples to realize the expectations of those interested in the matter is supposably due to "incompatibility of disposition," which time was apparently unable to combat in its effects.

WOMEN AS ARCHITECTS.

We learn with interest that an award of one thousand dollars has been made to Miss Sophia C. Hayden, of Boston, for her design for the Women's Building at the Chicago World's Fair. A second prize of $500 was given Miss Lois L. Howe, also of Boston, and Miss Laura Hayes, of Chicago, received the third prize of $250. The awards were made by Mrs. Potter Palmer, president of the board of lady managers. The designs had previously been discussed and criticised by the chief of construction, Mr. Burnham, and by other members of the board of architects. The event is of interest, says the *Scientific American*, as indicating the hold that women are taking of the profession of architecture. In many respects they would seem pre-eminently suited for it. Their innate tact and taste, and their appreciation of the domestic wants, are elements which should tell in their favor, at least as designers of houses to be lived in. The field of women's work is rapidly broadening, and this competition emphasizes their entrance into the higher professions.

DEATH VALLEY.

THE RESULTS THUS FAR OF THE GOVERNMENT EXPEDITION.

The Government expedition to Death Valley is bringing forth its first fruits. Large consignments of dead creatures illustrating what it has thus far accomplished in the study of the life of that amazing region have reached the Department of Agriculture at Washington. The collections thus far received include 2,368 mammals, beside numerous birds, reptiles, insects and other specimens. It is desired by the scientific authorities in charge to find out just what animal and vegetable life is able to preserve existence under conditions so extraordinarily unfavorable as obtain in this desert of horror, the like of which is not found anywhere else in the world. Of plants there is scarce anything to be discovered beside cacti, which only represent a sort of vegetable half-life, and clumps of chapparal that are gray instead of green. One sort of cactus, that grows to be five or six feet in height, with extended branches, is called the "Dead Man," because each stalk in the night looks like a corpse by the wayside. In rare spots where water has gathered may be seen a singular fleshy bush without leaves and with thick green stems. Such vegetation as there is is rank and spiny, its gray or dull olive hues harmonizing weirdly with the parched and barren aspects of the great alkali crust, extending north and south between two precipitous walls of mountains, the Amargosa and Panomint ranges. Those who have visited it say that it is beyond human powers of description to picture the wholly unnatural scene to be beheld there—the vast stretches of white plain variegated with black lava, the alluring mirages, the strange appearance of the towering hills outlined like the backbones of monstrous beasts against the yellow sky, the total absence of trees, the dearth of animal life, and the intense heat, from which there is no escape. Here and there, too, are pebble beds miles in extent, made up of agate, moss agate, chalcedony, jasper and obsidian. This astonishing desert, however, is by no means so devoid of life as its aspect by day would lead the observer to imagine. As soon as night falls it is all aswarm with creatures of various sorts. Countless lizards come out of their burrows to look for insect prey, snakes wriggle across the alkali crust, horned toads creep about, and scorpions and tarantulas of enormous size sharpen their claws for combat. Rats, mice and squirrels trot about in active pursuit of game, and wildcats and coyotes forsake their lairs on the mountain sides and roam over the plain in pursuit of all sorts of smaller mammals. It is a nocturnal population, simply because the heat is so great as to forbid going out in daytime. The Death Valley expedition has not attempted to encamp upon the desert itself for the sake of acquiring specimens. It has been obliged to content itself with pitching tents about the edge, at the foot of the mountains, making brief expeditions across the torrid plane, setting traps and returning as quickly as possible. By this method the traps could be emptied and set again without much loss of time. Time is of consequence in Death Valley, where a man requires two gallons of water daily to keep him from dying of thirst, and even then is a sufferer. Little traps of a very simple and most admirable pattern are employed for catching the small mammals. Two or three dozen of them can be conveniently carried in the pockets of one's coat, and the game coveted can enter from any side. Each one is hardly more than a wire spring, ingeniously contrived, so that the victim is not obliged to enter a hole, sees no danger, and does not dream of peril until he is caught. Corn meal is employed for bait, and is found most fetching. For the large mammals the gun must be brought into requisition, while the reptiles, usually slow of movement, are readily gathered in. Of the birds there are very few in the neighborhood of Death Valley, though the raven, that funereal fowl, is very plentiful in the woods that skirt its edge, crying with mournful notes for the many travellers whose dried corpses are scattered over the burning level. As quickly as possible after they are caught the animals trapped and shot are skinned by the explorers, all of whom are skilled taxidermists. No great pains are taken with the stuffing. A lump of raw cotton supplies the place of vitals, and the tail is extended by a wire thrust through its length. Arsenic is sprinkled all over the inside for preservative purposes, and the specimen is stretched with four pins on a board to dry. As soon as they have thus been made ready, the preserved creatures are forwarded to the Department of Agriculture at Washington. Supply wagons travel constantly between the expedition and the nearest outposts of civilization, to get provisions and convey mails. A great many individuals of each species found have to be killed and forwarded, because individuals here and there differ, and it is necessary to determine where these individual differences end and new species begin. For example, one kind of rat may have ears of various sizes and different lengths; but it is requisite to find out the line of demarcation which separates this animal from another species. Thus far the animals sent in to the department are merely such as have been found in Death Valley, because the expedition has been availing itself of the cool weather in that region. Now it has retreated to the mountain slopes, and it will not be possible to conduct any further investigations on the torrid plane until late next autumn. Nearly all of the creatures found in the valley are nocturnal in their habits, because they are not able to venture out in the daytime on account of the great heat. Among them are three species of ground squirrels, which live in burrows and feed at night upon roots, leaves and seeds of plants. One of them often climbs the stalks for the purpose of getting at the seeds. At other times it stands on its hind feet, clasps the stems with its fore paws and bites off the seed-pods, distending its cheek pouches enormously with the food. One fellow, shot by Dr. Merriam, chief of the expedition, had thirty-nine unbroken seed-pods in his pouches. Another most interesting animal that inhabits Death Valley is the "kangaroo rat," which makes its way about by jumping. It has long and powerful hind legs and a surprisingly long tail. Its coloring varies from light gray to dark brown, according to whether it frequents the alkali or the lava, nature intending to prevent it from capture by the likeness of its hues to its surroundings. The kangaroo rat lives in burrows, as does likewise a smaller kind that is commonly called the "kangaroo mouse." But neither is in any true sense a mouse or rat; they belong to families quite different. Nevertheless, there are plenty of real rats in Death Valley, as the expedition has found. One kind that lives in the chapparal, with bare tails and exquisite soft fur, is the staple food of the Digger Indians, who dwell in the mountains thereabout. The latter catch the beasts with dogs, frightening them out of their nests, which are made like those of squirrels, of great size, in the bushes or bunches of cactus. With respect to the kangaroo rat, one extraordinary point should be mentioned, relating to a certain development of their skulls, which bulge out at the sides in a surprising way. In fact, no such big bulges as these, which con-

tain the heating apparatus, are to be found in any other known animals. One of the most curious sorts of rodents common in Death Valley is the "scorpion mouse," which lives almost wholly upon scorpions. By the "instinct," which means experience, inherited through generations, it has learned which end to tackle its prey by. Another creature in the same region that likes scorpions also is the "chapparal cock," which gobbles them by thousands, and is not less fond of centipedes, tarantulas, lizards and horned toads. The last named are too big to swallow at a gulp, and so the fowl tears them to pieces before devouring them. Perhaps the most beautiful mouse in existence is found in Death Valley, and is known as the "grasshopper mouse." It is a lovely beast, fawn-colored on the back, with a snowy belly and sides, a short tail and pretty little ears. Other mammals forwarded hither from thence are "pocket mice," with pouches outside their throats to store provisions in, gophers, weasels, shrews, and a newly discovered species of lavender-gray fox with long ears. A wonderfully big species of coyote has been found in the valley. One funny thing about this kind of animal is that it is enormously fond of watermelons; but it has to starve for them out there. Only fifty miles west from Death Valley, which is one hundred and fifty feet below the sea level, Mt. Whitney, the highest mountain in North America, up lifts its mighty peak, covered with perpetual snow, three miles into the air. Thus within a day's journey of each other the lowest and the highest point on this continent are found. Dr. Merriam wrote that he had breakfasted on top of twenty feet of snow and was composing his letter to Secretary Rusk, at 4 P. M., in an altitude of rather less than nothing and a temperature of 110 degrees Fahrenheit in the shade. The expedition would be very glad to ascend Mt. Whitney, but the task is likely to be an impracticable one. Above there are depths of snow which are continually precipitating themselves in avalanches. Below, on the lower slopes, the dissolving ice has reduced the ground to the condition of a hopeless morass, through which travel is altogether impracticable. There is no path up the mountain by which even a mule could journey. In the region described is to be found a most astonishing opportunity for the observation of a traveler, inasmuch as within fifty miles he can pass through all the life-zones of the earth, from the hottest tropic to the frozen Arctic, and view not only the vegetation, but the beasts and birds of the various climes traversed. It seems very strange to find upon the summits of Mt. Whitney, the San Francisco Mountain and other peaks scattered over the warmer parts of the earth, small colonies of veritable Arctic life, both vegetable and animal. But this is explained when it is realized that during a period immediately preceding the present, and known as the "glacial age," the entire northern part of the world was buried in ice, the ice-cap, which in places was several thousand feet in thickness, extending southward as far as Philadelphia. When this vast cosmic glacier receded, many Arctic plants and creatures were stranded on high mountains, where at sufficiently lofty altitudes the temperature never became too high for the continuance of their existence. For an example, the San Francisco Mountain in Arizona is an extinct volcano, inhabited by plants and animals which could not possibly have reached it since the glacial period. Though an isolated peak rising out of a vast and burning desert, its snowy top is a veritable Arctic colony.

RECOVERED AND NON SUITED.—Here is a queer case for an action. A man was insane and determined to throw himself out of the window of the asylum. He made several attempts, and was prevented by the servants. Put in a new apartment he tried it again, jumped out of the window, fell on the lawn, injured himself seriously, but, strange to say, the shock cured his mental disorder. At once he sued the officers of the asylum for negligence. The plaintiff was nonsuited. There is a delightful legal quibble about this, for the pros and cons are many.

MINUTE ORGANISMS.

THE REALM OF THE MICROBE IN NATURE.

All living things throughout the animal and vegetable kingdoms are composed of cells, springing, in the first instance, from one single cell. The entire human child, with all its great future possibilities, is, as Hæckle says, in its first stage only a single ball of *protoplasm monerula*. But at the other end of the scale we have microscopic organisms, existing as simple cells, capable of performing all the functions of life, and of playing an important rôle in the economy of nature. Pasteur, in the course of his study of the germ theory, argued that all that has lived must die, and all that is dead must be disintegrated, dissolved or gasified; the elements which are the substratum of life must enter into new cycles of life. One grand phenomenon, he saw, presides over this work—the phenomenon of fermentation. What, then, is the cause of fermentation? In order to answer this profound question, Pasteur devoted himself to the study of the microscopic beings, which he finally divided into two great classes, the aerobies and the anaerobies—those which require free oxygen for their existence and those which are killed by the presence of free oxygen, although able to wrest oxygen from the materials whence they derive their nourishment. The aerobies are those which begin work on the surface of things, their mission being to clear the earth by a process of slow combustion of all that is dead. The anaerobies, working simultaneously, spring into activity underneath the surface of putrescible matter, and, dying on exposure to the free oxygen of the air, are, in their turn, swept away by the aerobies on the surface. Thus the two classes of minute living organisms co-operate towards the fulfilment of a common end, the one beginning work which the other takes up and completes. But for their united efforts we should cease to live, for the earth would be littered with fallen debris and organic matter of every kind, all of which it is their function to transmute into the very elements which are necessary to life again. In the parts of the earth where these organisms do not exist there is no vegetation, no organic matter, no life of any kind; the region is one vast field of ice, a sandy desert, or an expanse of eternal snow. When perchance these desolate places are invaded by living creatures who starve and fall by the way, there is no decay, for the organisms whose office is that of putrefaction are not present to perform their analytical functions. "Thus," says Pasteur, "the destruction of everything that has lived reduces itself to the simultaneous action of these three great natural phenomena, fermentation, putrefaction and slow combustion. The carbon, the hydrogen, the nitrogen of organic matters are transformed by the oxygen of the air and by the action of these aerobies into carbolic acid, vapor of water and ammonia gas." Having thus recognized the vast importance of these minute organisms, Pasteur, the chemist, watched, with unceasing interest, the work of these greater chemists in Nature's own laboratory. Not only were they engaged in the immense business of preserving the balance between life and death, but they participated largely in the every-day work of the world, and were taking an active part in the industries of man. The power of these lowly and invisible creatures is so enormous that they are well called "the masters of the world." If we neglect the laws of health, they are the Nemesis which deals punishment; for in the steady, ceaseless pursuit of duties they spare none. All organic matter is the same to them, whether it be the human body, living, or the dung-heap at the cottage door. In nature some of these organisms live only in living bodies, and are consequently distinguished as parasites, while others live on dead bodies, and are known technically as saprophytes, but in the laboratory both forms, as a rule, can be cultivated on artificial material, rabies being an exception, as it can only be cultivated in the living bodies of animals. The Rev. Dr. Dallinger, who keeps a museum of living putrefactive organisms, describes one of them, to which he has devoted special attention, and thus reveals the marvelous workings of nature in a world we cannot see. This creature is so minute that the average measurement is $\frac{1}{10000}$ of an inch in length and $\frac{1}{15000}$ of an inch in breadth. Nevertheless, it has six flagella, each one of which is three times as long as the length of its body. The movement of these creatures is exceedingly beautiful and graceful, with the long flagella waving to and fro. After a moment's rest the group under observation will be seen to start into active movements in a series of wave-like leaps, reminding one of the movements of a shoal of porpoises, which is continued for from ten to fifteen undulations. This organism, unlike others described by Dr. Dallinger, was never anchored, and had no power of attaching itself, but by freely darting upon the matter attacked, such matter was visibly, in the course of half an hour, reduced in size and altered in shape. Each one in turn, in a space of about two seconds, comes into contact with the particle and at once recedes to a distance of four or five times the length of the flagella, and instantly again darts upon the object, and this may be continued by given forms for hours. Fifty to a hundred may be seen with ease in one microscopic field pursuing their untiring work. It is the more entrancing that it is apparently rhythmical, not like the measured march of a regiment, but the rhythmic movement of a peal of bells. These are examples of the putrefactive organisms at work throughout nature, in company with a vast number of other forms, all engaged in ridding the world of putrescible matter. It is difficult to imagine any study more fruitful in happy results to mankind or more intensely fascinating to the student than that comprised in the new world of the invisible. The point where perhaps most discussion has taken place is that on the border line between the pathogenic and the non-pathogenic organisms. In some cases, for instance, that of the *Bacillus subtilias* and the *Bacillus anthracis*, the difference is so slight that it can hardly be detected under the microscope, yet the one is harmless to man and the other deadly. From the study of the familiar fermentation of yeast Pasteur passed to the study of the diseases of beer and wine, and thence to the silkworm disease, which latter proved the connecting link which established the general relationship between the diseases of beer, wine, and all putrescible things, with the diseases of all living creatures from silkworms to man.—*Mrs. Priestly, in Nineteenth Century.*

SCIENCE AND THINGS.—Lord Salisbury, in a recent lecture before the Chemical Society of London, said: "Astronomy is, in a great measure, the science of things as they probably are, geology is the science of things as they probably were, chemistry is the science of things as they are at present." To these adds the *Electrical Engineer*, "electricity is the science of things as they probably will be."

WARMTH AND VENTILATION.—Suppose a medium-sized sitting room with four people and two gas jets; the air must be changed every fifty minutes to keep it pure. As air is heated it expands and becomes lighter per cubic foot. If all the air is heated equally, it remains at rest after expansion; but if hot air is in the presence of cold air, the latter, by reason of its greater heaviness, forces its way down and drives the hot air up. The moving force of air currents is the greater weight of the colder air. This, then, is the force by which we are to drive out foul air and put pure air in its place. Pure external air will always drive out foul air if you give it a chance. In a room the air arranges itself according to its temperature; the hottest lies along the ceiling, the coolest along the floor. The hottest is the newest and purest. The coolest is the oldest and therefore the foulest. The air is gradually cooling from contact with the walls and windows. When hot air enters a room it rises at once to the ceiling and spreads across it. If there is an escape there, an open window or ventilator, it goes out, leaving the cooler foul air almost undisturbed. From this we see that a window slightly open at the top may cool a room but not purify it.

LAND NAVIGATION.

A CALIFORNIAN'S CONTRIVANCE TO CLIMB MOUNTAINS, CROSS STREAMS, AND EXPLORE WILDERNESSES.

Plans worthy of the authorship of Jules Verne have been undergoing a process of slow evolution in the brain of C. M. Lemery of East Oakland for nearly four years, and now if he had $150,000 he would confidently begin a most remarkable expedition with a remarkably novel contrivance. He has completed working drawings of a queerly contrived "land ship," with which he proposes to roam through the undiscovered gold regions and the unexplored plains and depths of Africa, discovering long-lost deposits of riches, the source of Solomon's gilded glories, gathering tons of precious ivory, revealing the unknown in books of travel and adventure, and generally winning wealth and fame if success shall reward his hopes. His "land ship" is a big car of aluminum, strong and light, which is to climb mountains, jolt over logs, travel through forests and over plains, and, like a duck, plunge from the banks of rivers and lakes right into the water and speed uninterrupted to opposite shores. This contrivance would be at once the home, fort, shelter, means of transportation, and travelling storehouse of the exploring party. It is not the first attempt to combine a steam road engine and steamboat, yet the application appears to be an original one with Mr. Lemery. Mr. Lemery seems to be neither an enthusiast nor an adventurer. He has no particular ambition to be a great explorer, and the whole thing to him is a business proposition. He is a quiet-mannered man, 31 years old, and is a machinist and engineer by trade. He has been on the Pacific coast fifteen years, and during four years of that time was in business at Reno, Nev. He has spent a good deal of time prospecting for gold, and as a prospector he spent a good deal of time exploring the Sierra Madre Mountains in Mexico. About four years ago he became impressed with the idea that the Dark Continent was the one remaining new country where a poor man could get rich easily and the idea has clung to him ever since. He believed that there was plenty of gold in African mountains forgotten or yet undiscovered, and he believes so yet. He wanted to go there to prospect for mines, and in planning how he could travel long distances through an almost unknown country the idea of a steam-engine to travel on land early occurred to him. His mind was busy with his African prospecting engine for months, and a year and a half ago he made a small model of one. He broke it up and went on developing his plans. Three months ago, with the aid of a civil engineer, he completed drawings of a contrivance satisfactory to himself. As strength and lightness are requisites, Mr. Lemery proposed to build the "land ship" almost entirely of aluminum, which weighs 168 pounds to the cubic foot, while steel weighs about 475 pounds to the cubic foot. The cylinders of the engines would be of steel and much of the fittings and furniture inside of wood, The body of the land ship as planned is 50 feet long, 13 feet wide, and 7 feet high. It is to be made of aluminum plates one-fourth of an inch thick for the lower half and one-sixteenth of an inch thick for the upper half of the sides and roof. In the rear end is a large space for wood, which can be cut and loaded anywhere, and the boiler stands abaft the centre. At the forward end are two twenty-four horse-power cylinders working a shaft which bears a wheel outside the car at each end. By an endless chain the motion of this wheel is transmitted to a larger one between the two main wheels, fourteen feet in diameter, which are driven by means of chains passing over the driving-wheel between them. The main wheels are built like a bicycle wheel, the spokes being aluminum rods one-fourth of an inch in diameter. The tires of the main wheels are eighteen inches in diameter. The large wheels have no axles connecting with the car. The car rests on a shaft which passes through the driving wheels and the main wheels are connected by a strong aluminum bar which supports the car and can revolve on the main shaft. The wheels could thus go over logs without elevating the car much, and the end of the bars bearing the front main wheels can be hooked up readily, making a three-wheled car, easy to turn around. The front of the car rests on a single wheel, which turns readily in any direction. At the front end is a drum, on which 800 feet of cable, to pull the car if necessary, or pull obstructions out of the way, can be wound by a small engine for the purpose. The bottom of the car is a water-tank, while another water compartment surrounds the outside of the car. The interior is to provide living accommodations for twenty men. As a steamer the body of the car or "land ship" resembles on its bottom a flatboat or scow schooner. A lever connects a propeller shaft with the machinery, and as the land ship climbs down into the water and begins to float, the propeller sends it onward over the glassy surface of some crystal lake, rippled only by the awful hippopotami. If the water trip be long the land wheels can be taken off and laid on the roof. When wood is to be cut the propeller is slipped off its shaft, and a little wood saw chews up fuel in no time. The engineer works the land ship from his pilot house in front. The whole car is planned to weigh fifteen or twenty tons. "You see," said Mr. Lemery, as he explained his drawings yesterday, "every part will be made so that it can be taken off very readily. I would expect to make from three to twenty miles a day with it, according to the troubles met in clearing away. They would be great in a forest, but I would avoid forests. Attached to this land ship I would have another car just like this, except that it would have no machinery, and in it I would take a three years' supply of provisions and ammunition. The expense of an army of porters would be avoided. The car would be proof against the arrows of hostile natives, and in it we could defy thousands. I would not expect any trouble of that kind, however, for there is always a way to get along with savage tribes. The sight of our land ship steaming through their country would likely scare them out of it. Well, I haven't been able to figure closely on the cost of the ship yet, but I suppose one would cost about $20,000. I would like to get financial backing enough to build two of them and two supply cars in New York, and I ought to have $150,000. I would calculate on being gone five or six years. I would go mainly to prospect for gold. That country is full of it. No, I don't know just where I would go to look for it. I would go to most any of the mountains—perhaps the Mountains of the Moon. No, I do not know whether they have been prospected or not, but I don't think so. Oh yes, there's plenty of gold there. Where else did Solomon get his gold? I would take a company of strong men with me. I would have three or four mining experts, a doctor, a man to write the book, a photographer and a scientific man or two. There is ivory to be traded for in the interior, and ivory is worth $6 a pound. I could carry tons of it. The book and views would be worth a good deal of money. I don't know just where I will look for the money now. Two years ago Senator Hearst heard of my scheme and told me he would back me when it was ready."—*San Francisco Chronicle.*

CITY FLOWERS.

HOW THE METROPOLIS IS SUPPLIED WITH BOUQUETS.

Big and beautiful red roses bloomed near a Broadway florist one evening, and he talked to a *Sun* reporter freely of the prosperity that had crowned the steadily growing business of supplying Gothamites with flowers. White blossoms and abundant greenery made a background and a striking contrast for the great mass of odorous red. A delicious perfume filled the room. Electric lights in ground-glass globes threw a soft yellow glow over the display.

"June, the month of roses," said this wise florist, "is the salvation of the hot weather trade in flowers in the metropolis. It is, so to speak, a sort of financial buffer to break the effect of the dull season that comes with the summer months and their plentitude of lovely flowers. Jacks are all the rage now, and they are beauties, and more abundant than the lilies of the field even. They make a handsome boutonnière for the promenade. They can be bought at retail now at prices ranging all the way from 50 cents a dozen for the pot growth jack to $1.50 a dozen for the best and richest cut variety. Thousands of them are brought into the city every day. One grower alone sends as many as 4,000 to 5,000 a day. Most of these come from New Jersey and Long Island, and the interior of the State supplies the rest. They are received in great heaps at the Thirty-fourth Street Ferry, at the Grand Central Station, and at the Weehawken, Cortlandt Street and Desbrosses Street ferries. Their great abundance makes June the harvest time for the tenement dwellers on the east and west sides of town, who love flowers as much as the wealthy do, but whose limited means deprive them of the opportunity of gratifying an elevating and beautiful fancy at any other time of the year. There is a boom that is also a boon to the people. When the jacks go out all that remains practically to yield a profit to the retail dealers is the steamship and out-of-town trade. All summer long florists supply flowers to tourists who are going to Europe. That branch of the trade is improving, I believe. It consists chiefly in making up baskets to be displayed on the tables of the dining rooms of the outgoing steamships. There is some business, but not so much, in supplying bouquets for the pretty girls who are bound to Europe. A good bouquet can be purchased for $2 or $3. Baskets of flowers cost from $5 to $25. The latter sum will secure something really artistic in appearance. The only other thing that the dealer does in the summer time that is profitable is to supply out-of-town orders from the East and West for cut flowers. New York is the great centre of supply for surrounding cities and towns. Of course, there is a demand all summer long for boutonnières, but very little money is made at it, for the flowers are so cheap, and the quantity bought at any one time by an individual customer is necessarily limited. The stock is very perishable, moreover, and that has a sort of discouraging influence, and the business of the dealer isn't circumspect." The florist led his visitor to the summer storehouse for cut flowers. It was a huge double box about seven feet in height, with an interior very much like that of the giant refrigerators used by butchers and liquor dealers. In the top was a long trough filled with ice. He touched a key and the interior became brilliant with electric light instantly. Cut flowers were heaped on the floor of the refrigerator. Roses were laid in great profusion on shelves, or were blooming in vases. The mass of color was a delight to the eye. In the corner of the refrigerator were thermometers to enable the florist to keep the temperature always at an even degree and to guard against making the atmosphere too chilly. "Flowers will keep in perfect condition for three days here," he said, "but no longer. They begin to fade on the fourth day, and are good for nothing on the fifth. Here we store, in addition to the roses, peonies, sweet pea blossoms and corn flowers, which are also abundant and in demand for ornamental purposes at this season. There is a regular fashion in boutonnières nowadays. Colored flowers are the proper thing; for example, for the promenade, but at night the buttonhole flower must be white. It makes an agreeable contrast against the black of the dress-coat. White pinks are favorites for evening wear. Gardenias make a very pretty nosegay, too." "Which is the most profitable season?" "The Easter holidays are far and away ahead of any other season, not even excepting New Year's, which used to be the great day in the retail trade. The custom of sending ornamental cards as an Easter offering is gradually being superseded by gifts

of handsome flowers. Some of these floral gifts are very rich and beautiful. They are made up in ornamental baskets, and cost anywhere from $5 to $100, according to size and design. Twenty dollars is about the average cost of an order for an Easter basket. Christmas is a very busy day for the retailers. Church decoration is not, however, so much a feature of the day as it used to be. Retailers get very many more orders for flowers for private parlors for Christmas than for churches. The same rule applies to the trade on New Year's Day. The custom of displaying flowers in the parlor then is growing each year, and I don't think anybody will dispute that it is a pretty custom and worthy of encouragement. One of the features of the flower trade in this city is the great popularity of violets. This lasts from November until April. Millions and millions of bunches of violets are sold during that period. Men are fond of wearing them in their buttonholes, and as for women, well, they have a veritable passion for the fragrant and handsome blossoms. But you mustn't make the mistake of thinking that all the profit of the florist's trade is made in cut flowers exclusively. The successful florist is the one who cultivates a specialty. He can make a reputation, if he is a capable man, for one or two particular things, and keep his stock so superior that no other florist can successfully compete with him. He may make a fortune in time in dealing in foliage plants or flowering plants, and pay little or no attention to the cut flower trade. Or, if he chooses, he may turn his attention to roses, or violets, or chrysanthemums, or orchids or any other particular thing that enjoys popularity. There is more to the flower trade," he added, "than most people know, and its details are complicated. An army of men and women are kept busy making wire and baskets expressly for the cut flower trade. To make money at all the retailer must have capital enough to be independent of any particular grower. The competition of the trade is so great, that, to keep customers, the retailer must secure the best. Something may happen to the flowers grown by one particular grower, and the retailer is badly handicapped if he is compelled to take inferior stock. The middleman may become an important aid in solving the difficulty for the perplexed retailer. There are half a dozen middlemen in the trade who deal with all the great growers, and they keep the retailers posted as to the extent and character of the stock of the different growers and protect him from risk. The census bulletin of April 20 should be read by all those interested in the growth of the popular taste for flowers. The bulletin tells the story of a hundred years' progress in detail. It shows, for example, that while there was only one commercial florist in the land in 1800, florists' establishments are now numbered by the thousands, and are in every State and Territory, excepting Idaho, Nevada, Indian Territory, and Oklahoma. Women conduct 4,659 of the establishments. The trade gave employment in the country last year to 16,847 men and 1,958 women, whose combined wages aggregated $8,483,657. More than $1.500,000 was expended for fuel for the hot houses, and 3,425,600 wholesale and 17,630,094 retail catalogues were issued. Tools and implements valued at $1,587,693 were used last year, and the total estimated value of the entire plant of the trade in the country was $38,355,722. The total product of roses was 49,086,253 ; of hardy plants and shrubs 38,380,872, and of other plants 152,835,292, valued at $12,036,477. More than $14,000,000 worth of cut flowers were sold in the past year. The State of New York, according to the census, leads the Union in the extent of its business. It has 793 florists' establishments, 50 of which are carried on by women. They are valued at more than $9,000,000. Pennsylvania is second, with 544 establishments, Massachusetts third, with 407, and New Jersey fourth, with 366. New York florists give employment to 3,172 men and 240 women. More than $2,000,000 was paid as wages to the men and $66,000 to the women. The census bulletin gives an estimate of the relative popularity and profit of commercial flowers. Roses, of course, lead, with carnations next. They represent 65 per cent. of all the sales. Violets, chrysanthemums, lilies, hyacinths, smilax, bourvardia, heliotrope, pansies and tulips, in the order named, represent 25 per cent. more, while the remaining 10 per cent. is made up of orchids, tube roses, mignonettes, primroses, camellas, daffodils, etc. As to the profit made on the sales of the several varieties of flowers, the census reports roses as the best paying, carnations second, violets third. There is a demand for aquatic plants, and the development of these is now becoming a specialty of many growers."

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

June.

MEAT.—Beef, lamb, mutton, ham, kidneys, liver, sausage, veal.

GAME AND POULTRY.—Pigeon, chicken, duck.

FISH.—Anchovy, bass, bluefish, blackfish, cod, eels, clams, flounder, haddock, halibut, herring, lobsters, mackerel, mussels, perch, porgie, prawn, salmon, shad, turtle, trout, sturgeon, whiting, weak-fish.

VEGETABLES. — Beans, cucumbers, carrots, cauliflower, lettuce, onions, parsley, parsnips, potatoes, shallots, spinach, turnips, radish, rhubarb.

FRUITS.— Cherries, strawberries., bananas, pineapples.

PRACTICAL RECIPES.

SOUP STOCK.—Take a shin bone weighing five pounds, and pour over it a gallon of cold water and let it stand on the back of the range, where it will heat up very slowly for nearly an hour, then let it cook briskly for half an hour, add a little cold water, skim and set it back again to simmer for five hours, then add a little parsley, one or two bay leaves, seven cloves, a stalk or two of celery, an onion quartered, a carrot and a turnip cut in good sized pieces. Let it simmer another hour, then strain and season, and keep in a cool place for soups and gravies.

SHAD WITH SPANISH SAUCE.—Select a small shad and split it and remove the backbone, wash and dry it. Pound to a paste a little garlic with two red peppers that have soaked for a minute in hot water; pour a little of the water in which they soaked into the paste as you pound it. Put a cupful of olive oil into a saucepan, add to it a teaspoonful of sharp vinegar and a little salt, when it is hot add the pepper-paste, cook for a moment, then pour it into a frying-pan and fry the shad in it; season with salt and pepper and dish; pour the sauce around the fish and serve.

TRIPE AND OYSTERS.—Wash a pound of tripe thoroughly in cold water, then cover it with fresh water and add a gill of vinegar and a little salt. Let it stand an hour; drain quite dry, cut it into neat square or diamond shaped pieces and boil three-quarters of an hour in water slightly salted. When it is done take out the tripe and add to a quart of it a large tablespoonful of butter, half a saltspoon of white pepper, a dash of lemon juice and a tablespoonful of flour dissolved in half a cup of milk. Whisk the milk and flour until free from lumps, and allow it to remain on the range until it becomes thick and smooth, then add the tripe and half the quantity of raw oysters and a little grated nutmeg. Let it remain on the range ten minutes longer, then serve.

BAKED CREAMED LOBSTER.—Cut a good sized lobster in half, take out the meat and save the shells. Cut the meat in small slices. Put two tablespoonfuls of butter in a saucepan, and add to it a teaspoonful of finely chopped young onion, cook them together for a moment, then add a tablespoonful of flour, mix this thoroughly with the butter and add a cupful of milk; boil for a few moments, then put in the lobster and seasonings of salt, cayenne and chopped parsley, let it boil up well, then add the beaten yolk of an egg, take from the fire and fill the shells with the mixture, brown in the oven for a moment then serve.

IMPERIAL DINNERS.

HOW THE EMPEROR OF GERMANY ENTERTAINS.

A dinner in the new palace at Potsdam, near Berlin, is a much grander affair than it was under the more recent predecessors of Emperor William II. The person honored with an invitation receives a great vellum card, carrying the united coats of arms of the Emperor and the Empress. The wording of the invitation is: "At the supreme command of their Imperial and Royal Majesties, the Head Court and House Marshal has the honor to invite —— to dinner, on ——, at 7 o'clock, in the new palace at Potsdam." On the reverse side are several directions as to the dress of the guests. Military men are ordered to appear in undress uniform, and civilians in knee breeches and shoes, dress coats, and white cravats. Guests who are to arrive by train are informed that carriages will meet them at the Wildpark station. A small time-table of trains returning to Berlin after the dinner is also given. The gorgeousness of a great dinner in the new palace has been described pretty fully by German snobs who worship this splendor, and German radicals who find in it a reproach to "the workingmen's Emperor." The details of dinners at which only the nearer acquaintances of the imperial and royal pair are present are, however, comparatively unknown. The number of guests at a great dinner is usually about sixty to sixty-five. The dinner consists of some ten courses, and is served in a few minutes less than an hour. There is one servant for every two persons at the table. The dishes are prepared in the imperial and royal kitchens at some distance from the palace, and are transported thence on a little underground railway, with its terminus near the dining room. The principal dishes are served on silver platters, the others on china of the royal Berlin manufacture. The crystal wine-glasses have broad gold bands and bear the combined monograms of the Emperor and Empress. The quality of the wines at the imperial table is the best to be had in 'heimers and 'bergers, and inferior to few in imported brands. German champagne is drunk only with the soup; otherwise French champagne is served. The table is decorated with huge masses of flowers, mostly roses, which are the Empress's favorite flower. Before every cover there is a small bunch of roses in glass. The room is lighted exclusively by wax candles in silver candelabra. At every place there lie a menu and a musical programme. Both are on white vellum, are ornamented with the united coats of arms of the Emperor and Empress, and bear only German type. Not a single foreign word appears on the bill of fare. At the top are the words "Imperial Dinner." The musical programme contains between twenty-five and thirty numbers, mostly by the Emperor's favorite composers, Wagner, Delibes, Meyerbeer, Weber, Sullivan, as well as a few military pieces. After dinner the entertainers entertain with conversation, but only a chosen few participate in it. The Court Marshal and Chamberlains usually learn in advance whose society is desired by the imperial couple during the evening, and these persons are escorted to the spot where the Emperor and Empress await them. In Potsdam such a dinner as the one described is usually given in the Jasper Gallery, and coffee is served in the shell salon. The music is played in the garden.

DICTIONARY LORE.

SOME COMMON MISTAKES IN PRONUNCIATION.

How many people are there who pronounce any proportion of their words correctly, not merely by reason of clipping and mouthing, but by ignorance of good usage? We find them everywhere, and they lay the accent on the first instead of the second syllable of acclimate, for example; they pronounce the second syllable of acoustics coo instead of cow; they do not put the accent on the last syllable of adept, as they should do; they leave the u sound out of buoy; they pronounce duke with the sound of oo instead of with the simple long u; emphasize the first instead of the second syllable of enervate, and sound the t in often. They are astonished to know that precedence has the accent on the second syllable and placard on the last; that quay is called key; that sough is suf; that the z instead of the s sound is to be given in sacrifice, and the reverse in rise; that subtile and subtle are two different words; that the last syllable of tortoise is pronounced "tis" instead of "tus;" that it should be used and not ust; and that it is not the "zoo," but the zoological gardens where one goes to see the chim*panz*ee, and not the chimpan*zee*. It is quite time, we think, when we hear one of these talkers, for some of the fancy work and fancy studies of the day to be dropped, and a little hard work on the dictionary put in their place.

AMERICAN NAMES.

A GOVERNMENT BOARD FIXES THE SPELLING OF NAMES OF TOWNS AND CITIES.

The second Bulletin of the United States Board on Geographic Names has been received by the AMERICAN ANALYST, containing a long list of names of countries, cities and towns, rendered according to a system of spelling that is in future to be the law. Many changes from old established usage are presented in the compilation before us. Thus the *Evening Post* of this city, which, whatever its other shortcomings, is an acknowledged authority in literary purism, includes in its *index expurgatorius*, the solemn caution to its editors, contributors, proof-readers and printers, that only four places in the United States, viz., Pittsburgh, Williamsburgh, Plattsburgh and Newburgh, spell their final syllable with an *h*—a statement wholly at variance with the orthograhy of the Post-office and other recognized official authorities. But in future, irrespective of any editor's dictum, the terminal "burg" is to be of universal application in such cases, as that is the verdict of the American Board of Geographic Names. Similarly with the "boroughs." There are to be no such things henceforth. Every one of them is declared officially to be a "boro" from this time, and the decision to this effect has gone forth beyond the possibility of recall. The object of the Board in making the alterations is to simplify spelling. This geographic spelling reform movement was begun chiefly because of uncertainties which exist respecting the names of places and features of landscape all over the United States. The Land Office surveyors, in laying out the country, have applied their own nomenclature to the regions which these surveys covered; but the names they selected were very apt to be altogether at variance with those adopted by the residents subsequent or otherwise, and this has given rise to confusion. On top of this comes the Post-office system, which has its own titles for localities numbering hundreds of thousands. Thus it frequently happens that disagreements occur, and "Cameron Post-office" is found to be located in the village of "Hamilton," for no earthly reason whatsoever, and other contradictions likewise. This makes constant trouble. Furthermore, the Coast Survey and the Light-house Board have hitherto had no agreement as to names, and here was more opportunity for misunderstanding. It is readily comprehended how the value of maps must be impaired by a mixing up of names. Obviously it is important that every locality and geographic feature should have its own appellation, and only one: therefore it has been decreed that such shall be the case, and the Board has entered upon the accomplishment of this purpose with "uniformity and simplicity" as its shibboleth. What it determines is the law. It is perpetual, unless some future President smashes it. A suggestion was made to the effect that its members should have power to appoint their own successors, but to this Mr. Harrison refused to agree, conceiving that the geographic spelling censorship ought not to be vested in the hands of a close corporation. The Board is composed of Prof. Mendenhall, Superintendent of the Coast Survey; Capt. Henry L. Howison of the Light-house Board; Capt. Thomas Turtle, Corps of Engineers; Lieut. Clover of the Hydrographic Office; Prof. Otis T. Mason of the Smithsonian Institution; Herbert G. Ogden of the Coast Survey; Henry Gannett of the Geological Survey; Marcus Baker of the Geological Survey, and Pierson H. Bristow of the Post-office Department. One of the first orders communicated to the Board after its recent appointment by the President was given by the Census Office. It called for a full list of the correct names of all the incorporated towns in the United States, numbering about 30,000. It may be imagined that the task has been no easy one, but the rule followed uniformly has been to accept the spelling locally approved, unless some insurmountable objection arose. Post-office lists have had to be compared with other authorities, and there has been no end of trouble in reconciling contradictions. A directory of Alaska was demanded early in the Board's existence, and it has been compiling the work ever since, reducing the geography of the great Northwest Territory to orthographic correctness. Following the same lines it proposes to cover the whole world, time only being needed for the purpose. The Board thinks it most desirable to keep all names, so far as may be possible, just as local usage indicates them. Even where designations

Buffalo Lithia Water, Spring No. 2, in Bright's Disease, Gout, Stone in the Bladder, and Diseases Generally of Uric Acid Diathesis, Etc., Etc.

DR. WM. A. HAMMOND, of Washington, D. C., Surgeon General U. S. Army (retired), Professor of Diseases of the Mind and Nervous System in the University of New York, etc.

"I have for some time made use of the BUFFALO LITHIA WATER in cases of AFFECTIONS of the NERVOUS SYSTEM, complicated with BRIGHT'S DISEASE OF THE KIDNEYS or with a GOUTY DIATHESIS. *The results have been eminently satisfactory.* Lithia has for many years *been a favorite with me in like cases, but the* BUFFALO WATER CERTAINLY ACTS BETTER THAN ANY EXTEMPORANEOUS SOLUTION of THE LITHIA SALTS, and is, moreover, better borne by the stomach. I also often prescribe it in those cases of CEREBRAL HYPERÆMIA resulting from OVER MENTAL WORK—in which the condition called NERVOUS DYSPEPSIA exists—*and generally with* MARKED BENEFIT."

DR. WM. B. TOWLES, Professor of Anatomy and Materia Medica, in the Medical Department of the University of Virginia.

"BUFFALO LITHIA SPRINGS, No. 2, belongs to the ALKALINE or, *perhaps, to the* ALKALINE SALINE Class, *for it has proved far more efficacious in many diseased conditions than any of the simple* ALKALINE waters.

"*I feel no hesitancy whatever in saying that in* GOUT, RHEUMATIC GOUT, RHEUMATISM, STONE *in the* BLADDER, and in all diseases of URIC ACID DIATHESIS, *I know of no remedy at all comparable to it.*

"*Its effects are marked in causing a disappearance of* ALBUMEN *from the urine. In a* single case of BRIGHT'S DISEASE *of the* KIDNEYS, I witnessed *decided beneficial results from its use, and from its action in this case I should have great confidence in it as a remedy in certain stages of this disease.* In DYSPEPSIA, especially that form of it in which there *is an excessive production of* ACID *during the process of nutrition*, in some of the PECULIAR AFFECTIONS *of* WOMEN, notably in SUPPRESSION of the MENSES, and in CHRONIC MALARIAL POISONING, etc., I have found it highly efficacious."

DR. G. HALSTEAD BOYLAND, late Professor of Surgery, Baltimore Medical College, late Surgeon French Army (Decorated), Member Baltimore Academy of Medicine, Member of American Medical Association.

"In BRIGHT'S DISEASE of the KIDNEYS, ACUTE or CHRONIC, BUFFALO LITHIA WATER, Spring No. 2, is, in my experience, *without a rival*, whether in the PARENCHYMATOUS form or INTERSTITIAL NEPHRITIS. In cases in which the ALBUMEN in the URINE reached as high as 50 per cent., I have known it under a course of this water gradually diminish and finally disappear, at the same time other alarming symptoms were relieved and the sufferers restored to health.

"In STONE in the BLADDER of the RED LITHIC ACID and the WHITE PHOSPHATIC DEPOSIT, the SOLVENT power of this water is *unmistakable*."

Water in cases of one dozen half gallon bottles, $5.00 f. o. b. here.

THOS. F. COODE, Proprietor, BUFFALO LITHIA SPRINGS, VA.

of places have been changed or corrupted, it is deemed advisable to keep the altered appellations rather than to attempt to restore original spellings and pronunciations. Where the same name appears with various spellings—for example, "Allegheny," which is applied with varying orthography to a range of mountains, a county, a river, and so on—the different spellings are to be regarded as distinct titles, no attempt being made to produce uniformity. When a choice is offered between two or more names for the same locality, the one that is most appropriate and euphonious will be chosen. As a rule hyphens will be done away with, each compound word being made single. Two words will be made one wherever it is possible, "Rock Ledge" becoming "Rockledge," and so forth. The possessive form will be done away with when practicable, apostrophes being wiped out. Foreign geographic names, as to their spelling and pronunciation, will be determined by the Board in accordance with the same principles. All such designations as apply in countries that use the Roman characters will be given in the form adopted by the nations having jurisdiction, except when there are English equivalents already fixed by usage. There is no use in calling Rome "Roma" on an American map, or Vienna "Wien." As for names in languages that do not employ Roman characters—Russian or Turkish or Chinese, for example—they will be rendered according to a system already adopted in Europe, which approximates results by giving to each Roman letter one definite sound, using English consonants and Italian vowels. This method, of course, only approaches the correct pronunciations, but it is uniform. It must be understood that the Board is not organized for the purpose of hunting up reforms to make. It merely decides questions of propriety in spelling and pronuncation when appealed to. The various departments of the Government are constantly in need of accurate information in such matters, and official as well as personal requests for instruction from all parts of the country require frequent attention.

Exhaustion

Horsford's Acid Phosphate.

The phosphates of the system are consumed with every effort, and exhaustion usually indicates a lack of supply. The Acid Phosphate supplies the phosphates, thereby relieving exhaustion, and increasing the capacity for labor. Pleasant to the taste.

Dr. A. N. KROUT, Van Wert, O., says:
"Decidedly beneficial in nervous exhaustion."

Dr. S. T. NEWMAN, St. Louis, Mo., says:
"A remedy of great service in many forms of exhaustion."

DESCRIPTIVE PAMPHLET FREE.

RUMFORD CHEMICAL WORKS,
PROVIDENCE, R. I.

BEWARE OF SUBSTITUTES AND IMITATIONS.

CAUTION:—Be sure the word "Horsford's" is *printed* on the label. All others are spurious. Never sold in bulk.

BUSINESS NOTES.

HORSFORD'S ACID PHOSPHATE

For sunstroke. It relieves the prostration and nervous derangement. Dr. H. C. McCoy, Algona, Ia., says: "I have used it in cases of dyspepsia, nervous exhaustion and wakefulness, with pleasant results. Also think it of great service in depressed condition of the system resulting from biliary derangement.

AIR NAVIGATION.—Mr. Renard, the distinguished French aeronaut, is building a new dirigible air ship of over 3,000 cubic yards capacity. It is said that the motor is made of aluminum and operates perfectly. The balloon will soon be finished and will be tested shortly. It will leave Meudon and manoeuver between Versailles and Paris.

CLEANLINESS AND CIVILIZATION.—No normal type of man could flourish in a sewer, and no civilization makes headway where soap is scarce and impure air inflates the human lung. Crime, like a maggot, has ever fattened on such impurities, and the ominous discontent of the present age is the most intense where the sanitary laws are the least regarded. On the line of this indisputable verity civilization constructs its sewers, regulates the sanitary conditions of school houses and prisons, and, as a continuance of the same good work, has started the crusade against the chimney.

STOUT WOMEN'S DRESS.—The stout woman is always asking what she shall wear, says an exchange. Now these are some of the things she should not wear: She should not wear a tailor-made suit fitting her figure closely; it brings out every pound of flesh for the benefit of lookers-on. She should not wear a rosette at her belt, either at the back or front; it makes her look thicker through. She should not wear a lace or ribbon ruff about her neck, though the soft feather one is permissible if it have long ends. She should not wear a short skirt; it gives her a queer, dumpy look that is specially undesirable. She should not wear her hair low on her neck; it should be high and arranged with great smoothness, though it need not look oily. She should not wear a string of beads about her neck, rings in her ears, or, if her fingers are short and fat, many rings on them.

SCARING THE CONSCIENCE.—Of all her curious customs London cannot boast of a more singular one than that formerly so strictly adhered to at Holland House, one of the most historic old mansions in the British capital. The last of the lords Holland shot himself during a fit of despondency; everything pointed to a clear case of self murder, yet the Holland family could never be dissuaded from the notion that the old man had been murdered by some unknown assassin. Accordingly every night for years it was the custom for one of the family to go to the rear of the house punctually at eleven o'clock and fire a gun, for the purpose, it is said, of "scaring the conscience" of the murderer. This curious practice is a relic of mediæval days in continental Europe, and the case in point is probably the only instance where it has been noticed since the days of the Crusades.

PATER FAMILIAS.—Lucas Negreiras Paez left his home in Spanish Gallicia 72 years ago, to seek his fortune in America. A few weeks ago he returned to Spain to pass the rest of his life. He landed at Barcelona with his whole family, which consists of 16 daughters, of whom 6 are widows, 9 are married, and 1 is single; 23 sons, of whom 4 are widowers, 13 are married, and 6 are single; 34 granddaughters, of whom 3 are widows, 22 married, and 9 single; 47 grandsons, of whom 4 are widowers, 26 are married, and 17 are single; 45 great granddaughters, of whom 2 are married and 43 are single; 39 great-grandsons, all single; 3 great-great-grandsons, and 72 sons-in-law and daughters-in-law. In all it is a family of 279 persons. This great-great-grandfather was married three times and has had 39 children, 9 of whom appeared in pairs. The first born is 70 years of age, and had 17 sons, the eldest of whom is 54 years old, or 44 years older than his uncle, the last born son of the old man Paez. The head of this family is 93 years old and still hearty. He is erect, broad-shouldered and alert. He is a steady smoker and drinks wine moderately. He has a large fortune and is said by the Barcelona dailies to own a great hide and leather establishment in Boston. His whole business is managed by him and his sons. The ship in which the family was transported to Barcelona is the property of the father of all, and is commanded by one of his grandsons.

ORIGINAL. NO. 41.

Strawberry Cottage Pudding.

BY MRS. DEARBORN,
Principal Boston Cooking School.

Cream ¼ cup butter; add ¾ cup sugar gradually, beating all the time; then add 1 egg beaten till thick and light. Mix together a generous pint of pastry flour and 2 tea sp. Cleveland's Baking Powder; add this to the first mixture alternately with one cupful of milk.

Beat well together, pour into a buttered baking-pan and bake about thirty minutes in a moderate oven. Cut in squares and serve with stewed and sweetened strawberries and cream. (Copyright, 1891, by Cleveland Baking Powder Co.)

Use only Cleveland's baking powder, the proportions are made for that.



An even teaspoonful of Cleveland's Baking Powder does as much as a heaping teaspoonful of others. A large saving on a year's bakings. Try a can, Cleveland's.

25 CTS. PISO'S CURE FOR CURES WHERE ALL ELSE FAILS. Best Cough Syrup. Tastes good. Use in time. Sold by druggists. CONSUMPTION 25 CTS.

Fine Table Wines

From our Celebrated Orleans Vineyard.

Arpad Haraszthy & Co

Producers of the

ECLIPSE CHAMPAGNE,

530 Washington St. SAN FRANCISCO.

GENERAL AGENCIES:
NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOS. H. & PEBBLES' SONS CO., 73 West Fourth Street.
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.

PURE PEPSIN

In Powder and Scale.

MANUFACTURED BY

ARMOUR & COMPANY, Chicago.

Guaranteed free from adulteration or make-weights; of excellent physical properties and high digestive power.

Under similar conditions, **ARMOUR'S PEPSIN** will exhibit greater activity than any other pepsin now before the profession.

The Manufacturers will be pleased to supply members of the Medical Profession with samples of their pepsin, and with full details regarding digestive strength, if desired.

SEE PAGE 296 FOR VALUABLE OFFER.

WATCHES.

EVERY one wants a watch, and naturally a good watch that keeps accurate time, presents a handsome appearance, and is inexpensive. If such a watch can be found of American manufacture, it is an additional appeal to our patriotism. Just such a watch as this ideal THE ANALYST PUBLISHING COMPANY is enabled to offer as a Premium to its readers. Having some large advertising contracts we have been enabled to procure the movements of the manufacture of the best known American watch factories, namely, the Waltham, Elgin, Hampden and Illinois Watch Companies. These movements are adapted for both ladies' and gentlemen's watches, and are warranted by the makers. These movements have seven jewels, patent lever movement, chronometer balance, patent safety pinion, sunk hard-enameled dial, straight line visible palette, stem winders, hand set; in fact, contain all the latest improvements and can be readily cleaned or repaired by any ordinary good watchmaker. They can be regulated to run as close as any movement.



It is needless to say that to case these movements in solid gold cases would make them too expensive, yet they are cased in what are known as gold filled or stiffened "Ladd" cases, and are warranted to be 14 karat gold, made from two sheets of 14 karat gold overlaying fine composition metal, with regular jointed caps, covers and bezels, and to wear at least five years. They are not plated, nor rolled gold, but actual 14 karat gold cases, thin of course, but stiffened and strengthened by being filled with this fine composition metal. They are finished in the same manner, engine turned and engraved as solid gold watches, and wear and look just the same. No one but an expert can tell them from a solid gold watch. These watches are made both open face and hunting case style, in gentlemen's or ladies' sizes. For gentlemen we recommend plain engine-turned cases; for ladies, a handsomely engraved case.

How to Obtain One of these Watches.

These watches are not to be purchased from us at any price. Send us a club of 25 subscribers to the AMERICAN ANALYST, and $25, the regular subscription price, and one of these watches (your choice of style and size) will be immediately forwarded, post-paid and registered, to your address. You need not wait until you have your 25 subscribers all together, but forward them as you get them and they will be credited to you, and when the number is complete the watch will be sent. A subscription for two or three years will be counted as two or three subscribers.

As these watches are retailed by jewelers at not less than $25, it will be seen that we are offering a real premium with the sole object of increasing our circulation, and that by taking advantage of our offer any one can obtain a good, reliable and handsome watch without cost. As the number of these watches at this price is limited, it is advisable to take steps at once to procure a bargain.

THE ANALYST PUBLISHING CO., 19 PARK PLACE, NEW YORK.

BICYCLES

GIVEN AWAY TO BOYS AND GIRLS!

AN OPPORTUNITY OPEN TO ALL.

The Analyst Publishing Company being desirous of largely increasing their subscription list, will furnish every one with a beautiful Safety Bicycle, ABSOLUTELY FREE, in return for a few hours' canvassing.

To every boy and girl who secures 75 subscribers for the American Analyst at $75, we will give a splendid

$40.00

NONPAREIL

SAFETY BICYCLE.



These bicycles are adapted in size to boys, but are strong enough to carry a man. A boy's bicycle should be a strong one. They are manufactured by the OVERMAN WHEEL CO., the makers of the celebrated VICTOR Bicycle, and have the full guarantee of the makers.

The following is a brief description of the NONPAREIL SAFETY; 26-inch wheels; ball bearing all around, including pedals; solid crescent rims; double tangent spokes; three-fourths inch tires; cranks, three throw, $4\frac{1}{4}$ to $5\frac{3}{8}$ inches; guards to both wheels; tool-bag, oiler and wrench. Finished in bright enamel, all exposed metal heavy nickel-plate on copper.

In selecting these machines as a premium, we have disregarded cheapness and selected a Bicycle which is serviceable, and the makers of which have an established reputation for building the best Bicycle that money, machinery and brains can produce. We are actually furnishing the Bicycles and Papers at less than cost, but hope by stimulating active and successful canvassing, and thus enlarging our subscription lists, to make an eventual profit. We positively guarantee these bicycles to be just as here represented. They will be shipped by express f. o. b. in New York.

Subscription orders must be made out plainly and legibly, and sent as fast as secured, addressed to

THE ANALYST PUBLISHING CO., 19 Park Place, New York.

HOSMER, CRAMPTON & HAMMOND,

NO. 43 COMMERCIAL STREET,

BOSTON.

COMMISSION MERCHANTS,

HAY, STRAW, FLOUR & GRAIN.

E. B. HOSMER, G. W. CRAMPTON, BENJAMIN HAMMOND, A. L. ROBINSON.

BOSTON HAY AND STRAW MARKET.

Hay, choice to fancy, in large bales	$15.00 to $15.50
Hay, choice to fancy, perpetual pressed bales	14.00 to 15.00
Hay, fair to good	13.00 to 14.00
Hay, poor to ordinary	11.00 to 13.00
Hay, Clover and Clover mixed	10.00 to 12.50
Hay, swale	8.50 to 9.00
Straw, Rye, good to prime	17.00 to 18.00
Straw, Oat	8.00 to

BOSTON, June 13, 1891.

Receipts for the week are 368 cars of Hay and 42 cars of Straw; corresponding week last year, 231 cars of Hay and 25 cars of Straw. Receipts continue liberal and stocks have accumulated slightly. We quote the market firm but quiet. While the present crop prospects are so uncertain, receivers are unwilling to shade prices; at the same time with the present heavy receipts it is not possible to advance them. Some cars of strictly fancy hay in large bales are still selling at $16 per ton. Rye straw is easier with receipts in excess of the demand.



HAMMOND'S

CELEBRATED

Calumet Oleomargarine

Strictly pure, cheap and healthful.

Ask your grocer for it.

Put up in packages of all sizes, also prints and rolls.

C. H. HAMMOND CO.,

607 to 615 THE ROOKERY,

CHICAGO.

Also offices at Boston, South Omaha, Neb., and Hammond, Ind.



We shall be glad to supply our readers with any periodical published at club rates.

Send us a postal naming periodical and we will quote you prices.

ANALYST PUBLISHING CO.,
19 Park Place,
New York.

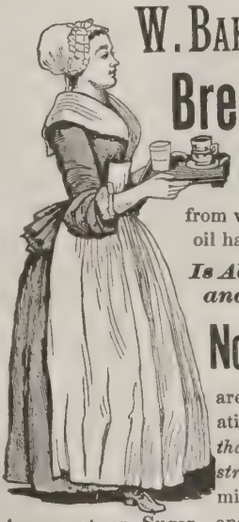
We can save you Fifty Dollars when you Build. See A complete set of Plans to build from, simply state about price of dwelling desired. 25 cts. in stamps. Our book "Beautiful Homes." 25 cts. Our monthly book "The National Builder," 25 cts. Address



The National Builder, Adams Exp. Bldg., Chicago, Ill.



GOLD MEDAL, PARIS, 1878.



W. BAKER & Co.'s Breakfast Cocoa

from which the excess of oil has been removed,

Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

THE GREAT AMERICAN TEA COMPANY

LADIES

GET UP ORDERS.
Entire New Departure.
A HANDSOME PRESENT TO EVERY SUBSCRIBER.

THE GREATEST INDUCEMENTS
EVER KNOWN TO INTRODUCE OUR NEW GOODS.

If you enjoy a cup of **Delicious Tea** send in your orders. 3½ lbs. Fine Tea by mail on receipt of $2 and this "ad". Beautiful premiums given away with $5 orders and upwards. The **most extraordinary bargains** ever offered, during the next thirty days. China Tea Sets and Lamps with $10, $15 and $20 orders to introduce our excellent **New Crop Teas.** Formosa and Amoy, Oolong, Congou, English Breakfast, Japan, Imperial, Young Hyson, Gunpowder, Sun Sun Chop and Mixed. Good mixed teas 20c. per lb. Headquarters in United States for Fine Teas. One pound of our tea will go farther than three pounds of trash. Thirty years' national reputation for selling **Pure Goods Only.**

THE GREAT AMERICAN TEA COMPANY,
P. O. BOX 289. 31 and 33 Vesey Street, New York.

PUBLICATIONS OF THE

ANALYST PUBLISHING CO.

THE AMERICAN ANALYST.
Weekly. Every Thursday. $1 per year.

THE ROOFER, TINNER AND SHEET-IRON WORKER.
Monthly. 15th each month, $1 per year.

THE LEATHER MANUFACTURER.
Monthly. 1st each month. $3 per year.

Reliable agents and representatives wanted everywhere on liberal terms. Address

ANALYST PUBLISHING CO.
19 PARK PLACE, NEW YORK.

GRAND PREMIUM OFFER!

A SET OF THE

WORKS OF CHARLES DICKENS,

In Twelve Large Volumes,

Which we Offer with a Year's Subscription to this Paper for a Trifle More than Our Regular Subscription Price.



CHARLES DICKENS.

Wishing to largely increase the circulation of this paper during the next six months, we have made arrangements with a New York publishing house whereby we are enabled to offer as a premium to our subscribers a **Set of the Works of Charles Dickens,** in **Twelve Large and Handsome Volumes,** with a year's subscription to this paper, for a trifle more than our regular subscription price. Our great offer to subscribers eclipses any ever heretofore made. Charles Dickens was the greatest novelist who ever lived. No author before or since his time has won the fame that he achieved, and his works are even more popular to-day than during his lifetime. They abound in wit, humor, pathos, masterly delineation of character, vivid descriptions of places and incidents, thrilling and skillfully wrought plots. Each book is intensely interesting. No home should be without a set of these great and remarkable works. Not to have read them is to be far behind the age in which we live. The set of Dickens' works which we offer as a premium to our subscribers is handsomely printed from entirely new plates, with new type. The twelve volumes contain the following world-famous works, each one of which is published *complete, unchanged, and absolutely unabridged:*

DAVID COPPERFIELD,
MARTIN CHUZZLEWIT,
NICHOLAS NICKELBY,
DOMBEY AND SON,
BLEAK HOUSE,
LITTLE DORRIT,
OUR MUTUAL FRIEND,
PICKWICK PAPERS,
BARNABY RUDGE AND CHRISTMAS STORIES,
OLIVER TWIST AND GREAT EXPECTATIONS,
THE OLD CURIOSITY SHOP AND THE UNCOMMERCIAL TRAVELER,
A TALE OF TWO CITIES, HARD TIMES AND THE MYSTERY OF EDWIN DROOD.

The above are without question the most famous novels that were ever written. For a quarter of a century they have been celebrated in every nook and corner of the civilized world. Yet there are thousands of homes in America not yet supplied with a set of Dickens, the usual high cost of the books preventing people in moderate circumstances from enjoying this luxury. But now, owing to the use of modern improved printing, folding and stitching machinery, the extremely low price of white paper, and the great competition in the book trade, we are enabled to offer to our subscribers and readers a set of Dickens' works at a price which all can afford to pay. Every home in the land may now be supplied with a set of the great author's works.

"BILLET"

are

Carefully Selected
French Sardines,
Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS.

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,
HOWARD STREET, BOSTON, MASS.

OUR GREAT OFFER

TO SUBSCRIBERS

TO THE

AMERICAN ANALYST.

We will send the **ENTIRE SET OF DICKENS' WORKS,** *in* **TWELVE VOLUMES,** *as here described, all postage prepaid by ourselves, also* **THE AMERICAN ANALYST** *for* **ONE YEAR,** *upon receipt of* **$1.50,** *which is only* **50** *cents more than the regular subscription price of this paper.* Our readers, therefore, practically get a set of Dickens' works in twelve volumes for only **50** cents. This is the grandest premium ever offered. Up to this time a set of Dickens' works has usually been $10.00 or more. Tell all your friends that they can get a set of Dickens' works in twelve volumes, with a year's subscription to **THE AMERICAN ANALYST** for only **$1.50.** Subscribe now and get this great premium. If your subscription has not yet expired, it will make no difference, for it will be extended one year from date of expiration. We will also give a set of Dickens', as above, free and post-paid, to any one sending us a club of three yearly subscribers.

ADDRESS:

THE ANALYST PUBLISHING CO.
No. 19 PARK PLACE,
NEW YORK.

Tabasco Pepper Sauce

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced, by connoisseurs, to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY,

NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

To Subscribers, Readers and Advertisers.

SUBSCRIBERS' attention is called to the great variety of interesting and instructive subjects treated in this number. We respectfully ask the co-operation of our subscribers in extending our Subscription list, which will enable us still further to increase the value of the AMERICAN ANALYST to them.

The CASUAL READER is specially requested to examine our liberal premium offer.

ADVERTISERS who do not know of this Journal already, are respectfully referred to article headed "A Business Benefit."

ALL are kindly requested to peruse this number thoroughly.

The AMERICAN ANALYST can be had at any news stand in the United States. Any newsdealer will take orders for it, the American News Company being our wholesale agents. All postmasters will receive subscriptions.

NATRONA BI-CARBONATE OF SODA.

(ABSOLUTELY PURE.)

The nature of the raw material from which NATRONA BI-CARBONATE OF SODA is made—viz., kryolith, a mineral containing *pure sodium*—insures a purity and uniformity of product which cannot be obtained from any other known material. In making BI-CARB. SODA from any other raw material, the use of sulphuric acid is a necessity, but none is used in any part of the process of making NATRONA BI-CARB.; hence its entire freedom from the slightest trace of arsenic, which is always present in ordinary soda. Its absolute purity and entire freedom from all traces of *sulphate of soda*, common salt and other impurities, render NATRONA BI-CARB. NEARLY TASTELESS, and being bolted through the finest bolting-cloth, insures the finest stage of division.

To these indisputable facts the attention of CONSUMERS of soda is specially called. They are IMPORTANT, and should influence both those who use and those who sell soda, to buy and sell NONE BUT THE BEST.

The NATRONA BI-CARB. Soda is kept in stock by almost every wholesale druggist and grocer throughout the United States, of whom it may be ordered.

Natrona Bi-Carb. Soda is unequaled by any other brand of English or American Manufacture.

PENNA. SALT MANUFACTURING CO.,

NATRONA CHEMICAL WORKS. PHILADELPHIA, PA.

ESTABLISHED IN LONDON, 1831.

DEAN'S PATENT

Ardenter Mustard



W. G. DEAN & SON,

361 & 363 WASHINGTON STREET, 84, 86, & 88 NORTH MOORE STREET, N.Y.

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,

184 Greenwich St., N.Y.

INSTRUCTIONS TO SUBSCRIBERS.

The **Names of all Subscribers** are registered as soon as received, and paper is always promptly forwarded.

Postage.—The postage to all parts of the United States and Canada is paid by the publisher.

Remittances of small sums may be made with comparative safety in ordinary letters. Sums of one dollar or more must be sent by registered letter or P. O. money order, otherwise we cannot be responsible for same. Silver must not be sent in a letter.

Postage Stamps will be received for the fractional part of a dollar, and in any amount when it is impossible for patrons to procure bills, but you must send one or two-cent stamps only.

SUBSCRIPTIONS.—The AMERICAN ANALYST will be sent one year to any subscriber for ONE DOLLAR. New subscriptions can begin at any time.

We Stop the Paper at the expiration of the time paid for unless a renewal of subscription is received. Those whose subscriptions have expired must not expect to continue to receive the paper unless they send the money to pay for it.

Change of Address.—Subscribers wishing their addresses changed must invariably give their former as well as new address.

Missing Numbers.—It occasionally happens that numbers of our paper sent to subscribers are lost or stolen in the mails. In case you do not receive any number when due, write us a postal card and we will cheerfully forward a duplicate of the missing number.

Most Important of All.—In every letter that you write us, never fail to give your full address, plainly written—name, post-office, County and State.

Address all letters to

THE ANALYST PUBLISHING CO.,
19 Park Place, New York.



A HIGH-GRADE PIANO
AT A VERY MODERATE PRICE.
NEW DESIGNS. FANCY WOODS.
Terms Easy. ✣ Monthly Instalments.
TWO, THREE AND FOUR PEDALS.
Catalogues, Prices, Terms, Etc., sent to any address.
EVERY PIANO WARRANTED 5 YEARS.
(Mention this Paper.)

SWIFT'S
CHOICE
Chicago Dressed Beef
AND
MUTTON
Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,
UNION STOCK YARDS,
CHICAGO, ILLS.

GLENN'S
SULPHUR SOAP.
Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,
C. N. CRITTENTON,
115 FULTON STREET,
NEW YORK.

Be progressive and keep abreast of the times. Avoid dyspepsia by using **Lard Compound** and **Cottolene,** a substitute for lard.

The highest medical authorities pronounce them healthful; and expert cooks commend them.

Our **Clairette** brand of cotton oil soap is the purest and best laundry soap in the market; as pleasant to the hands as genuine castile.

N. K. FAIRBANK & CO.,
CHICAGO AND ST. LOUIS.

THE LABORATORY.

To Inventors, Manufacturers and Applicants for Patents

The AMERICAN ANALYST may be consulted upon all matters involving theoretical or applied chemistry. Advice and opinions given. Analyses and assays made. Patents perfected and secured. Terms reasonable.

Address, AMERICAN ANALYST,
19 Park Place, N. Y.

The Standard of Excellence.
KINGSFORD'S
OSWEGO
Pure and Silver Gloss



STARCH
KINGSFORD'S
OSWEGO CORN STARCH
FOR
Puddings, Custards, Blanc-Mange, Etc.
THE PERFECTION OF QUALITY.
WILL PLEASE YOU EVERY TIME.
Always ask your Grocer for these goods.

THE ORIGINAL AND GENUINE
(WORCESTERSHIRE SAUCE).



LEA & PERRINS' SAUCE

In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—

Lea & Perrins

Beware of Imitations; see that you get Lea & Perrins'

For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS, NEW YORK.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 26. NEW YORK, THURSDAY, JUNE 25, 1891. WHOLE No. 226

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - $1 per year.
Single Copies, - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.

Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.

Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,

H. LASSING, M. D., } Editors.
T. P. McELRATH, }

No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

Air (*Continued*) 303
Beauty and Taste 304
Domestic Dietetics 305
Editorials 301
Arsenical Poisoning; Condensed Cream Once More; Flats and Sunshine.
Electrical Quackery 305
Ice 304
Moths 302
Pure Food 302
Soft Soap and Hard 306
The Starfish 306

ARSENICAL POISONING

Repeated efforts have been made in Massachusetts to have an amendment passed to the adulteration of food and drugs act forbidding the use of arsenical coloring in wall paper, carpets, hangings, textile fabrics, and particularly on children's toys, and boxes to hold confectionery. The committee appointed by the legislature recommended a postponement of nearly the whole subject for further investigation under the direction of the State Board of Health. The committee recommended placing immediate prohibition on the use of poisons in children's toys or confectionery, but declined to go further at present. Since then a minority report from the same committee was presented in which three members dissent from this merely tentative action, assigning the following reasons: They recite the fact that the petitioners, 2,352 in number, of whom 1,207 are physicians, including a large majority of leading members of the profession in Massachusetts, ask only for the same protection now afforded against the adulteration of drugs and food, a protection similar to that afforded in France, Germany, Austria, Bavaria, Denmark, Holland, and other countries. No remonstrance was received except from dealers in wall paper and an expert from this city and his former associate, and one gentleman interested in apartment houses, where the papers were compained of. Not a single, other citizen, manufacturer, expert or physician appeared before committee, they say, to object to the passage of the proposed bill, and no one at all appeared to object to limitation of the use of arsenic in fabrics. On the contrary, the largest manufacturer of textiles in New England, speaking for himself and others, said that they would be glad to have a reasonable and fair prohibitory law. The report then cites the facts brought before the committee regarding illness resulting from exposure to arsenic in paper and fabrics, the cases presented being too well attested, they say, and too serious, to be dismissed with ridicule. As a conclusion, therefore, the minority reported in favor of so amending the law concerning the adulteration of drugs and food as to include household articles contaminated with arsenic. It will be remembered that Prof. Chandler testified strongly against the proposed restrictions, he, doubtless, being the expert referred to in the report. Prof. Chandler, however, is a chemist, and not a physician. He naturally looks at the question from a chemical standpoint, and takes it for granted that manufacturers would carry out the full chemical manipulation of the arsenic, which is used in all these colors as the oxidizing agent. Had the learned professor given practical directions for the use of a cheap substitute for arsenic, such as caustic soda, in this oxidizing process, he would have solved the difficulty and obviated legislation. Physicians may reasonably be expected to know more of the causes of disease than chemists, and enough of them have testified from time to time in such a straightforward manner as to the dangers of arsenic in domestic use, as to render highly desirable its exclusion from such use. Of course to do this would cause trouble, and probably lessen the profits of manufacturers, but that such commercial considerations should be allowed to have any weight in matters concerning health is simply monstrous. Most persons who are acquainted with the character of arsenic would greatly prefer to take no chances with it. As manufacturing is now conducted they have practically no defence against the opinions, prejudices, or unscrupulousness of those who furnish the materials that they are obliged to use, and at the very least there ought to be provided some easy way in which people who are not partial to arsenic may know when it is being served to them and when it is not. Another great danger of these arsenical colors arises from the fact that the public generally mistakingly believes that the only poisonous color is green, when in fact the bright reds and several other colors which are extensively used in carpets, hangings, clothing, hosiery, etc., are far more dangerous. How this poison acts is not so well established as the fact that many people have been seriously injured in health by sleeping in rooms papered with arsenical paper, or furnished with arsenical carpets and upholstery.

CONDENSED CREAM ONCE MORE.

We have pointed out to our readers that the Helvetia Milk Condensing Co. of Highland, Illinois, is selling unsweetened condensed milk as "Condensed Cream," and that to keep it from fermenting they put this product through a sterilizing process which, as we clearly proved, so changed the character of the milk as to make it unfit for many uses. These statements have been strenuously and disingenuously denied by those who claim to speak for this company. In a late issue of the *Chicago Grocer* we find a descriptive article, evidently published in the interest of the Helvetia Company, as it contains an electrotype of the buildings of the company, in which there is a full corroboration of all of our statements. Speaking of the milk brought there in wagons it says:

"After heating it to a boiling temperature it is next introduced into vacuum cans, which apparatus are constructed of copper, holding probably a thousand or more gallons, and so arranged that the atmosphere may be entirely excluded. They are connected with air pumps by which the air in the pans is exhausted which enables the evaporation of the milk at a very low degree of temperature. When the milk is reduced to the proper consistency, it is a cream."

It is by this untrue statement that we charge the Helvetia Company with selling an article for what it is not. Milk cannot be condensed to make cream, and no one knows this better than the company which make such statements. The article then goes on: "Immediately after being filled the cans are "capped" and then conveyed to the "processing" room, where they are subjected to heating in large tanks. The object of the heating process is to destroy every living germ or micro-organism, harmful or not, which may be contained in the milk." It is this "processing" which breaks up the fat globules in the condensed milk and so changes its character that it is really not milk any longer. It may answer some purposes, but would be extremely dangerous for other purposes, such for instance as food for invalids or children.

FLATS AND SUNSHINE.

An almost complete change in the construction of metropolitan dwellings has been effected by the introduction of what are variously known as French flats, or apartment houses, and in New England as hotels. The primary object of constructing these buildings is to gain room by raising them higher. A five story tenement was at one time considered very high, but since the introduction of elevators nothing is now thought of

ten, twelve, fourteen and even sixteen story buildings. The question arises are these dwellings healthful? It is true that the various boards of health have prescribed certain rules according to which they must be built, but it would not be difficult to point out many vulnerable points, wherein these modern beehives, though amply provided with air space, are deficient in the equally important element of sunlight. We do not now speak of those so called flats in New York City, where by the addition of a vestibule door and a few yards of cheap oilcloth an avaricious landlord converts an ordinary tenement house into a "flat house" and thereby squeezes double rents out of unsophisticated tenants whose pride makes them willing to pay more to live in a flat than in a perhaps more commodious and cheaper tenement. Nor do we refer to the very high priced apartment houses which are more like family hotels than private dwellings. But we have in mind the medium priced flats and apartments where the rentals in New York and other large cities average from $40 to $100 per month. These are built with front and rear windows having the parlor in front and the kitchen in the rear, and these two are the only rooms in the apartments exposed to a direct sunlight. All the other rooms are between four walls and depend for light and air entirely upon so-called light and ventilation shafts. These latter are nothing more nor less than huge ventilation chimneys, and serve to average up all the foul air exhaling from the various abutting apartments. Even where the air in these shafts is pure and the light sufficient to do away with artificial lights on an average bright day, there is no sunlight. Put a flower in one of these inside apartments and it will fade and quickly die. The ventilation though ever so pure will not keep it alive. It needs sunlight to thrive. If a flower needs sunlight, how much more does a human being need it? Of course there are relative degrees in this absence of sunlight in modern flats, those higher up having more chance for the sun to reach them than those below which are surrounded by high buildings. But we assert, and we have the proof to satisfy us of the accuracy of our statement, that the lower stories of our modern flats are absolutely unfit for human habitation, excepting when they are situated on a street corner, and only ten per cent. of flat buildings in a large city can be so situated. Let those who dwell in these lower stories look back in their experience and say how the state of the health of their families, especially that of children, compares with that they enjoyed before they lived in these dark caverns where sunlight never enters. Let our boards of health examine their death statistics and say where deaths from zymotic diseases most often occur. Ask the physicians where disease is most stubborn and least readily yields to proper remedies. Not to mention the more serious ailments, how many of those who now dwell in these lower flats get up in the morning feeling feverish and lethargic, have aches in the head and limbs and feel the manifold symptoms of malaria? Surely it will not take much reflection to convince them that when they lived in the old-fashioned dwellings they were far more healthy. These flats are yet comparatively a novelty and experience will tell, but that experience may be dear.

PURE FOOD.

THE MANUFACTURERS PROPOSE TO HAVE A SHOWING ON THEIR OWN BEHALF.

At a meeting of Food Manufacturers, held in the Mercantile Exchange, New York, June 8th, with Mr. Reed Gordon, of Messrs. Gordon & Dilworth, presiding, the secretary was instructed to communicate with all those food manufacturers who aim to manufacture pure and wholesome food products of a fine quality only, and invite them to be present at the next meeting, with the view of joining this organization, to be known as the Food Manufacturers' Association of the United States. The object of which association is to encourage the manufacture of pure and wholesome food products, and to improve the quality and elevate the standard of food by every legitimate means; to enlighten the people as to the importance of using only the best quality of goods. It is believed by those interested in promoting this movement that such an association will contribute very much towards improving the quality of food products, and establish a pleasant and friendly feeling among the manufacturers of that class of goods, whose interests are identical, to the mutual benefit of all concerned. A committee appointed to draft a constitution and by-laws was composed of the following gentlemen: E. C. Hazard, chairman; Alphonse Biardot, of Franco-American Food Co.; Samuel W. De Coster, of Armour & Co.; E. C. Rich, of E. C. Rich & Co.; Townsend Cushman, of Cushman Bros. The secretary was directed to address a communication to the New York Retail Grocers' Association, inviting the members of that organization to co-operate with the food manufacturers in holding a food exposition in New York City the coming fall or early spring, whichever date may hereafter be agreed upon.

MOTHS.

A SEASONABLE DISCUSSION OF A MISERABLE PEST.

The great mistake folks make is to await the heat of summer before watching for moths. Artless young housewives look askance at the bare thought of bugs in their newly-built homes, but if they stop to squarely consider the subject, they must admit that visitors are at any time liable to bring in with their clothing a guileless moth, which, with good health and industry, can hatch hundreds of its kind in a week, and ruin everything of an animal texture with which its larvæ or grubs come in contact; therefore the need for serious watchfulness and a knowledge of the subject becomes apparent. One immediately protests, "But I have never watched specially for moths, and everything in the way of clothing and fabrics in my house has not been ruined." "True, but your immunity from depredation has been good luck—nothing more. The moth lays its eggs in dark places, and the grub which is hatched moves slowly, and its feeding spots are usually within a foot or so of its place of birth. If by good luck its place of birth is away from a textile fabric, the texture will not be hurt; if near, it is sure destruction." The quacks and "preventive" manufacturers have always reaped a rich harvest through the ignorance of people regarding the moth and its habits. Folks have bundled up their woolens and packed them away in their chests full of tarboline, or carboline, or cedarline, or camphorine, and actually believed that they would be safe until fall. They have wrapped up hundreds of moth eggs, which eventually hatch the grub. These odors will never kill a moth or destroy its life germs. To be sure a moth will not voluntarily seek a nesting place where the odor exists, but if boxed up with an odor it cannot escape from, it simply proceeds to lay its eggs in the atmosphere, which becomes a second nature to the grub when hatched. Anything saturated with arsenic, or creosote, or even salt, or impregnated with sulphur, the moth or worm will not touch, but the use of these articles is dangerous to the colorings of fine textures. It is discouraging, indeed, when a housewife shakes out her clothes and puts them in a camphor trunk and keeps them there all summer, to find that in the fall they are fairly riddled; but the trouble has been she watched only for moths, when the moth is not at all destructive. It is the worm that she should have been on the lookout for, which is hatched from the egg, and as the egg is hardly perceptible to the naked eye—a mere white speck like the point of a pin—it is often passed unseen. Until recently, the utmost confusion and ignorance prevailed regarding the nomenclature of the moth species, but it is now a clearly defined fact that there are three distinct species of wool-destroying moths common in this country, all of which are of European origin. To be scientifically correct, we should term them the Tinea pellionella, Linn.; the Tinea tapetzella, Linn.; and the Tineola biselliella, Hummel. The commonest species are light-brown and distinguished by spots. They begin to appear late in April and may occasionally be seen flitting about as late as August. They pair off, and the female then searches for suitable places for the deposition of her eggs, working her way into dark corners, crevices of the wall, cracks in the floor, or deep in the folds of garments, apparently choosing by instinct the least conspicuous places. The moth lays from eighteen to one hundred and forty eggs at a time. From these eggs hatch, in a period of from three to seven days the white soft body larvæ or worms, all of which begin immediately to make a case for themselves from the fragments of the cloth upon which they feed. The case is in the shape of a hollow roll, from a thirty-second to an eighth of an inch long. We have all noticed these "rolls" on fabrics and frequently we have crushed them, supposing that we have thus prevented all damage, when the very existence of the cylinder shows that the grub has already fed. As the worms grow, they enlarge this case by adding material which they get by feeding. The worm reaches its full growth in thirty-six days, and then crawling into some yet more protected spot remains torpid during the winter within its case, which by this time is thickened and fastened at either end and the full-sized cocoon. The transformation of the moth takes place within the case during the following spring. Such is the life round of the species. The worm feeds on woolen fabrics, curled hair, hair-cloth, furs, feathers or anything of that character which may possess an animal deposit, for within the cellular tissues of hair there is the same nutriment which one finds on a smaller scale within a bone. It is the thirty-six day period, from the time that the eggs are laid to the time that the worm or grub reaches the full size, that the damage is done, and it is fortunate that all of the eggs that are laid do not hatch—in fact, but a small proportion ever find life. The second species constructs its cocoon mainly from fragments of the material upon which it has been feeding, spinning a certain amount of silk, however, wherever it goes, leaving the trace which one sometimes finds on woolen fabrics. This species is most common from Washington southward. The parent moth is of a dark straw color, and has none of the spots on it that you see on the Tinea pellionella. The moth of the Tinea tapetzella, the third species, is readily distinguished from all others by the front wings, which are black from the base to the body and white beyond, the white portion being sometimes crowded with dark-gray. The habits of these species are much the same, with the exception that the larvæ or worm of the last named is most destructive, using for its cocoon cylinder pieces of the cloth itself on which it is feeding. It must be now apparent to the careful reader that it is quite difficult to kill the infinitesimally small eggs by reason of their almost imperceptible diminutiveness and difficult also to eradicate the moth by reason of its secretive habits. A benzine spray is sure death, but there are many objections to its use and danger from its inflammable character; still, if the ordinary throat spray, which can be bought for a trifle, is filled with benzine, and the vapor thrown into crevices against moth or eggs, it will destroy them, but no light should be brought into a room thus treated, until after it has been thoroughly aired and the odor dissipated. After a thorough airing of a woolen fabric, for the purpose of driving out any concealed moth (for a moth abhors light), and after time has been given to the development of any concealed egg, you may be reasonably sure that there is nothing harmful on the fabric; then it is as safe done up in a paper parcel as

it would be if saturated and buried beneath all antimoth remedies in existence. Camphor, tobacco, naphthaline and other strong odorants are only partially repellent to the flying moth, and have no effect at all upon the eggs or the worm, which is the destroying element. The benzine spray is the least objectionable destroying agent that we know of. It may be used very safely upon carpeting, but the utmost care should be exercised in using it on fabrics of a delicate character. One should not confuse the moth with the carpet beetle. Frequently housekeepers discover their carpets eaten and they attribute it to moths; indeed, the carpet beetle is frequently called the buffalo moth. The perfect beetle is three-sixteenths of an inch long, and when disturbed it draws its legs and feigns death. It is white, black and scarlet, the scarlet being confined to a stripe down the middle of the back. It begins to appear in the fall, and soon the species pair off and the female deposits her eggs upon the carpet itself, and not in the cracks and crevices, as generally supposed. During the daytime these beetles frequently fly to the windows, and may be caught there, but they seldom leave the house until their eggs have been deposited. The treatment is similar to that with moths.—*Upholsterer.*

AIR.

HOW WHIRLWINDS, WATERSPOUTS, AND CYCLONES OCCUR.

(*Continued from page* 269.)

The winds described in the previous number may be regarded as aerial currents. Originating in the unceasing but vain effort of the heated equatorial air, and the cooler polar air to attain an equipoise, they finally describe a great circle, which may be regarded as the normal condition of the atmosphere. This normal condition is, however, subject to many disturbances through the agency of locally originating whirlwinds, in which the air revolves in a circle forming columns nearly perpendicular to the earth's surface. The simplest and best known of these phenomena are the harmless whirlwinds which, on hot days, originate over the heated surfaces of roads, or other bare surfaces, whirling straw, leaves and dust, and bearing them upward. G. Von Rath describing a waterspout which he witnessed at Bonn, June 10th, 1858, writes as follows: "After long waiting in vain for any sign of rain, heavy thunderclouds were seen advancing from the south towards noon of the 10th of June. About one o'clock we saw in the same direction a pillar of whirling dust rising to a height of at least 700 metres. When the whirlwind reached the Rhine, the water over a circle of about fifty yards was lifted up, and the spray and foam on its surface was caught up into the whirlwind. Out of the blue-gray thundercloud stretched down a yellowish-white skittle-shaped point of cloud, until it touched the dust pillar, which had now reached the left bank of the Rhine. The whirlwind now sprang back upon the Rhine: the water was lashed to seething, whirling foam; and presently out of the foam a column of water reared itself almost perpendicularly. The column was divided into three shafts, which pursued their upward course parallel to each other, in the direction of the descending cloud point; the ascending and descending columns united, and the water was borne into the clouds, which were floating much higher than the Drachenfels. The waterspout resembled at first a Gothic tower, but as its foot reached some shallows in the Rhine it contracted to a giant obelisk, advancing towards the southern foot of the Drachenfels, which it did not reach, as the commotion in the water was only of short duration. The whirlwind, after lasting about half an hour, ended with a terrific downpour of rain. The course of the whirlwind was marked by fallen tiles, strewn branches of trees, and the cereals lodged so that the stalks in the middle of the course, which was about fifty yards wide, lay parallel to it, while those on the outer edges of the course were inclined towards the centre." The ocean waterspouts are of larger size, extending sometimes to a diameter of sixty metres, especially in the tropics. Rye attributes their origin to a fluctuating equilibrium of the atmosphere. When the temperature of the air falls more than one degree for every hundred metres of elevation, an ascending current of air starting from a stratum of equal density is accelerated in its course, ascending faster than it parts with its heat, so that it is always warmer than the strata through which it passes; but should it fall only a little below the temperature of the strata through which it is passing, it sinks downward with ever-accelerated speed. The conditions for a fluctuating equilibrium exist when a vapor-laden ascending current experiences a fall of temperature of only one-third of a degree for a hundred metres of elevation. Moist air ascends more lightly than dry air, for the heat set free by the condensation of vapor in its ascent expands the air and increases its buoyancy. Towards the partial vacuum created at the base of the ascending air current, the adjacent air masses rush in on all sides with increasing force, and are drawn upward long before they can reach the calm centre at the base of the column. The watery vapor is condensed into fog; out of a rapidly growing cloud there sinks a second funnel-shaped column, which unites with the first, and you have the waterspout. On the warm tropical ocean, under the influence of the sun's rays, over a broad area, the conditions favoring a fluctuating density of the atmosphere readily arise. Very little disturbance may suffice to promote the ascent of voluminous masses of vapor-laden air, which give off their vapor as they ascend, and by the liberation of its latent heat cause the expansion of the air, and thereby accelerate its upward course. Under the ascending aerial masses, the pressure naturally diminishes, causing a barometric minimum, with a fall extending to 700 mm. Encircling this calm region of aerial ascent, there is a pressure of the atmosphere from all sides, and the air would rush directly towards the centre, were it not for the earth's motion. But as the earth revolves from west to east, the aerial currents are subject to a deflection, to the right in the Northern, to the left in the Southern Hemisphere. As a consequence, the currents from north and south instead of taking a direct course to the centre are compelled to revolve around it in a spiral course, which in the Northern Hemisphere is from north *via* west, to south and east, that is, contrary to the movements of the hands of a clock, while in the Southern Hemisphere the currents pursue an opposite direction. Centrifugal force prevents the centre from being reached, so that the motion of the air currents is almost circular. The revolving currents whirl around the central column of attenuated air, pursuing a spiral course upward, and thereby increase the tenuity at the centre, and tend to perpetuate it. On the Equator itself, as indeed anywhere between 5 deg N. lat. and 5 deg. S. lat., cyclones cannot arise, because the deflecting influence of the earth's revolution at the centre is so inconsiderable, there being no spiral movement within the area of the least atmospheric resistance. An attenuated column cannot, therefore, exist very long, being subject to the pressure of the direct instreaming lateral currents. These currents operate in the equatorial regions approximately under 10 deg. N. or 10 deg. S. lat. The middle point of a whirlwind advances with a speed which, with the West Indian cyclones, reaches from 25 to 35 kilometres an hour, and further north to 80 kilometres. In the Indian Ocean the whirlwinds move more slowly—5-20 kilometre. In the North Atlantic Ocean the course of the centre of the whirlwind, within the tropics, is towards the northwest, but between 20 and 30 deg. N. lat., that is, on the confines of the trade winds the course is deflected, the currents taking a northeasterly direction to the temperate zone. In the Southern Indian Ocean the storm centres pursue a southwesterly course within the tropics and a southeasterly direction in the south temperate zone. This is accounted for as follows: In a whirlwind originating in the region of the northeast trades the air circles from north *via* west to south and east. The northeast tradewind antagonizes the southeasterly portion of the whirlwind and decreases its speed, while it expedites the course of the northwesterly. In the southeast the air is rendered more dense; in the northwest, on the contrary, it is attenuated. As a consequence of the unequal pressure on the original centre, that centre is deflected towards the side on which the pressure is least, that is towards the northwest. But on leaving the region of the northeast trades this deflection ceases. The southern air has then greater centrifugal force for its increase of speed than the northern cool, dry air of the temperate zone, which originates in the northwest and flows through the southwestern half. A lively acceleration of speed, along with an appreciable attenuation, will now take place in the northeast point of the whirlwind. The centre of least pressure will consequently be deflected toward the northeast, and the centre of the whirlwind must necessarily follow this direction. Similar investigations have determined the course of the storm centre in the Southern Hemisphere. The right side of the cyclone is especially feared by sailors because the wind-driven ship is inevitably driven towards the point on which the storm centre is advancing and the hurricane is strongest. To get out of a cyclone a sailing vessel in northern latitudes must keep its starboard side to the wind, but be careful to keep outside the 'dangerous quarter.'"

A DOLLAR A MINUTE.—One dollar a minute is the charge for using the new telephone line between London and Paris. Distance about 280 miles. Forty cents a minute is the price between New York and Washington, about 240 miles.

BEARDS AND NATURE.—Philadelphia is still agitated over the Sunday shaving question. On this subject, Henry Labouchere has something to say in London *Truth*, viz.: "Had Providence intended that there should be no shaving on the Sabbath day, Providence would presumably have prevented beards from growing on that day. We allow cows to be milked on Sunday, in deference to the cosmic laws which cause the animals' udders to fill on that day. Why not show equal respect for the laws under which our beards grow?"

EARNEST LADIES.—In order to help keep Pittsburg streets clean the Ladies' Health Association of that city propose to send a paper, in the form of a pledge, to each householder and business man, and ask them to sign it and return it to the secretary of the association. The paper will ask that each one will have the sidewalk in front of their residence or place of business swept early in the morning, and no rubbish shall be swept therefrom into the street; the ash barrel shall be put out at the proper hour and taken in as soon as emptied; to prevent dust the ash barrels will be sprinkled; papers are not to be mixed with the ashes nor thrown into the street; nor will banana or orange skins be thrown into the street or on the sidewalk. The persons also pledge themselves to be watchful of the general condition of the streets, and all things noticed which are detrimental to the cleanliness or health of the city will be reported to the society.—*Sanitary News.*

AMERICAN TRUSTS.—Mr. Plimsoll, a member of the English Parliament, in an article in the *Nineteenth Century*, has discovered that in the United States no less than seventy-one large combinations were organized in 1888-89 Some of these include many others, in all 490 "trusts" were organized in two years. They have been formed to control almost every branch of industry, including the manufacture of paper bags, coffins and pickles, and it is computed they include no less than $2,000,000,000, or considerably more than two-thirds of the entire manufacturing capital of the United States. Mr. Plimsoll is afraid that further attempts will be made to foster and develop this odious trust system in England, and he urges her legislators to rouse themselves promptly to the danger of this fearful menacing calamity. He suggests that a select committee or a royal commission should be constituted without loss of time, "to inquire into the whole of the subject."

ICE.

NATURAL OR ARTIFICIAL, WHICH?

Ice at all seasons of the year has become a necessity and is now more than a luxury. In large cities it is required for many purposes almost indispensable for man's very existence. The butcher needs it to preserve his meat, the hotel keeper depends upon it to keep his provisions, every family must have it to prevent the daily food from spoiling; fish and poultry dealers and shippers, dispensers of all kinds of beverages, the ice-cream maker, dealers in butter, eggs and cheese, cold storage warehouses, brewers, and even the undertaker have to rely upon ice to enable them to carry on their business. The only question is what kind of ice to use, natural or artificial. If both are to be had at the same price, which is the best? As artificial ice has but lately come into the market as a commercial competitor with natural ice it has exerted a powerful influence in fixing prices. In New York City especially, where the dealers in natural ice, aided by an open winter and a hot summer, by dint of an unscrupulous combination had succeeded in fixing exorbitant prices upon their commodity, the introduction of artificial ice has been a boon to the consumer. Naturally the old ice companies, seeing their business taken from them, resorted to misrepresentations about the artificial product. Some of these misstatements are so preposterous that they indicate to a thinking reader that the icemen are of a very low order of intelligence, and consequently believe that the general public can be easily imposed upon by the silliest stories. Some of these canards are really funny, for instance, that artificial ice will turn meat black, that it does not give within fifteen or twenty degrees of the cold given by natural ice, that the ammonia circulating in the pipes through the brine tank leaks and, with the lubricating oils used, is deposited in the centre of the artificial ice. This last assertion is the most preposterous, because, to enable the ammonia and grease to come in contact with the ice, there must be contact between the brine and ice, which would make the ice salty. To make this still clearer we will briefly describe the process of making artificial ice and compare it with natural ice, leaving the reader to judge which would be preferable. Croton water converted into steam, after being filtered once, then condensed—the process of distillation, which all the world knows is the best and only way of purifying water or any liquid—passes through charcoal filters, being reboiled to force out the air and comes forth freed of all impurities. The purified water is conducted into the galvanized cans and frozen in thirty-six hours into solid cakes of ice so clear that print may be read through cakes eleven inches thick. There are no tinctures from iron pipes—they are galvanized. There is no iron box, but a galvanized can. There is no ammonia in the ice; it is impossible for it to get there or freeze if it were there. There can be no greasy smell or taste in the manufactured ice, for the water it is made of passes through fifty feet of triple burned hardwood charcoal, and no impurity can pass through this. Using the extremes of temperature in steam and frost in pipes constructed to avoid all rust, also such careful and repeated filtering, there are no greasy compounds in the ice. A word regarding the sources of natural ice. The great supply of this city comes from the Hudson River, above the flow of the tides. The Hudson is here practically an open sewer, and people are being brought to face this fact. The drainage of the city of Albany, with a population of 150,000 people, of fifty factories; Troy with 60,000 people and thirty or forty manufacturing places, several other towns and adjacent farming districts, empties into the Husdon River. The ice thus gathers the abominations of city filth, which it freezes, for the theory that nature precipitates all impurities into the water below was long ago exploded, as almost any schoolboy knows. Then, too, while the ice is being harvested, it receives on its surface the added filth of from 8 000 to 10,000 men, and 800 to 1,000 horses that spend entire weeks on the ice fields. These facts will, we think, sufficiently answer those who seek to injure an industry that is increasing in strength and popularity, and has already proven its ability to take care of itself, and taught the natural ice companies that their day of high prices is gone. The ice from lakes like Mahopac, Greenwood, Rockland, etc., is very little, if any, purer than Hudson River ice, for if it should have less sewerage in it, the amount of decaying vegetable matter washed in from its surroundings more than makes up in unhealthy germs what it may lack in the other respect. To summarize, then, we ask the question: Ice, natural and artificial—which is the better? Sometimes one, sometimes the other, as to the conditions under which it is made. Ice from the pure inland lakes, ponds and rivers of Maine or the North, is better than from the Hudson or the impure lakes, ponds and rivers in this vicinity, as it is harder, more stable, and contains more cold per cubic foot, being made at a lower temperature. In a word, the purer and quieter the water, and the colder the place where it is frozen, the better the ice. Ice machines, as a rule, produce lower temperatures, more continuous and even, than Nature in this latitude; hence, if the water to be frozen, being pure, be put into clean iron cans or moulds, its absolute quiescence being secured and subjected to a temperature lower than that of Nature, the product will be better than Nature's. On the other hand, if the pure water of a northern lake, pond or river be frozen at a temperature below that of the machine, the ice will be better than the machine-made. In either case it is pure only as the water is pure, nothing being added or taken away in the process of freezing. The better the ice the slower it melts, and no refrigeration ensues without melting. But if quick results are desired, as in the making of ice-cream, the ice must be broken that greater surface may be exposed to the action of the salt. Since the well-constructed and well-managed modern ice machine deals in lower temperatures than Nature affords in this climate, and there is no possibility of contamination by materials used, it follows indubitably that the machine ice is the better; and if the object to be attained is the refrigeration of rooms, warehouses, etc., and not the actual making of cakes of ice, the machine will do it far better than Nature and at less than half the cost, and if pure, solid ice be required it will make it at a less cost than it can be cut and housed at any lake or river, even under the most favorable conditions of wages and weather.

BEAUTY AND TASTE.

HOW WOMEN CAN MAKE THE MOST OF THEMSELVES.

Color is paramount in beauty. Generally this maxim would be understood but in one way. By "color" the average woman understands a high pink flush in the cheeks. If she has not this sort of color she takes it for granted that she has none. According to the popular idea a pale woman, or a "washed-out" one, has no tints or semi-tints in her face at all. This is the gravest of mistakes. An artist finds a hundred gradations of color in a complexion that to the uninitiated eye seems merely white or sallow or uniform olive. And that artist, were he given free scope to garb the woman in question as he chose, would so manage every detail that indefinite harmonies of hues would become salient, and produce the best possible effect. Color should be studied by every woman who chooses to make the best of herself, immediately after contours. And often the study pays better for the trouble and forethought it entails. The outlines of face and figure, though they may be very advantageously modified, can never be made over. Whereas, although no woman can change herself from fair to dark or the reverse at will, it is quite within her power to manage the matter of color generally in her toilet so that the best possibilities she possesses in that line may be made becomingly conspicuous, where before they were simply swamped and passed for nothing. Color, in a word, is much more malleable than contour. It is more fluctuating and can more easily be controlled by a master hand. The popular fallacy that the best hues of the complexion, of the eyes, of the hair, are brought out alone by the color of the gown chosen, is indicative of very superficial observation. This is much, certainly, but it is not all. One item—the arrangement of the hair itself—has the greatest possible influence in emphasizing or toning hues in the skin or eyes. A blonde of the pink and-white variety might, if she were so minded, wear her hair very plainly in lines very simple and distinct and guiltless of frivolously escaping wind-blown curls and stray locks. The extreme purity of the milk-and-rose skin of a flaxen-haired blonde is brought out in its perfection by these straight yellow lines. On the other hand, should a sallow blonde do her hair in this way, the yellowish tints of the skin, unsoftened by that vaporous surrounding of gold which makes the complexion whiter by contrast, would stand out in uncompromising distinctness. Such a blonde should endeavor by frequent shampoos to keep her hair as fluffy and golden as possible. (A moderate dash of washing soda in the water tends to this end; and tar soap used regularly at short intervals will impart, after a certain length of time, an added bronziness to red-gold locks.) She should then arrange her hair with as close a reference to cloud-like effects as other considerations admit of. On the other hand, she should keep the markings of eyelashes and eyebrows as definite as possible, weeding out and pinching and brushing the latter into a clear arch. A sallow blonde should seek to have her entire color-effect as soft as possible and as light as airy. A fresh looking mouth is a great advantage to her—a mouth with very white teeth and very healthy pink lips and gums. She needs, and should by assiduous care cultivate these attractions, as they counteract the muddiness that her complexion may suggest if not relieved by just such side touches. A sallow, dark woman, on the contrary, should proceed, as to the arrangement of her hair, on principles directly different. Fluffy hair only increases the look of thickness, of yellowness in the skin. In any case, where the hair is black, a frowsy coiffure can never be wholly recommended. When the skin is exceedingly white, with a brilliant color in the cheeks and lips, it is sometimes becoming, but the instances are too rare to form a rule. With the olive complexion and all its derivatives, the whitest, the finest, and also the richest and softest hues of the skin are brought out by a mode of coiffure which allows the raven glossiness of the hair to show in its full measure and relief. This is possible only where the lines of the coiffure are either straight or waved in perfectly distinct curves. The markings of the hair about the face must be definite; not sharp, but clear. Slightly heavy eyebrows, provided they be quite smooth and not disfigured by stray hairs straggling out of line, are not a drawback. Very white teeth are an immense relief from the prevailing sallowness. Distinctness, then, and that peculiar cleanliness of outline and expression which this distinctness brings, are the elements a sallow, dark woman most should seek to bring out in her features by the management of her coiffure, etc. The item of showing much or little of the neck habitually, is another very determining factor in bringing out the most or least becoming tints in the skin. Where the features are rather massive and the general look of the complexion dull, the white reflection thrown by the greater fairness of the exposed throat is usually an improvement to both—usually, but not invariably. There are women of a softly, duskily Oriental coloring, around whose eyes are rich bistrous tints—Rembrandt like shadows in brown—who never look more lovely than with a high-throated collar or band of dark velvet

choked about their necks. These lines must be studied individually. As to the colors to be worn in costume, one large law holds good throughout. Choose carefully only those tints of which a duplicate may be found in some degree of approximation in the hair, the eyes, or the complexion. This is an artist's law and it is infallibly safe to follow. Whenever you get away from it you are in dire peril of shipwreck somewhere. Simple as it is, though, and easily ascertained and acted upon, how few are its votaries is glaringly apparent in every assemblage of women the world over. It is easy enough to match the eyes and hair, certainly, even if a woman have not a sufficiently delicate eye for color to enable her to decompose into its component semi-tones the general tinting of her skin. A woman with blue-gray eyes is always becomingly dressed in any of those indefinite blue shades in which much gray is mixed. Almost always, as it happens, eyes of that color are found in conjunction with a thin, neutrally tinted complexion, of the sort sensitive to atmospheric changes. Now, complexions of this order have a tendency to a certain delicate blueness about the eyes and occasionally about the mouth. Blue is then very visibly present in the skin as well, and forms another indication of the colors most likely to be becoming above all others. To a rather sallow woman, with bronze-brown hair and brown eyes, all shades of brown and of yellow are becoming beyond any other colors. There is yellow in her skin and a strong dash of yellow also in her hazel eyes, although she is probably quite unaware of the fact. Take a dazzlingly fair blonde, put her in pale green, and she is delicious. And why? Because, as any artist would tell you, there is in the mother-of-pearl whiteness of that porcelain-like skin a, to him, perfectly distinct admixture of the lightest, faintest, most ethereal green. But the green will be more becoming if she have blue eyes than if she have brown; and the reason is simple, since blue and green blend one into the other in the spectroscope—are sister colors. A brunette with the ivory-white skin that the French call "mat," is never so exquisite as in cream color, and obviously because, as nearly as can be achieved, she has reproduced the tinting of her skin in her gown. Put a colorless blonde in the same cream color, and she will look very far from charming, but exchange it for a pale gray, and lo! the difference. And again the reason is obvious. In the blonde's sallowness there are tints of gray, capable, in unhealthy skins, of becoming earthy. In the dark woman's pallor there are yellowish tones always, and these are prominent likewise in her cream-tinted gown. In choosing colors which have no match in eyes, hair or complexion, the guide is, once more, to select those tints one of whose components is present, at least, in some shape in the coloring given you by nature. Take red. A dark woman with a yellowish pale complexion chooses a red inclining either to purplish magenta or to rose—a red in which there is very little admixture of yellow—and her face looms up above it, yellow itself as a saffron bag. Had she chosen one of the bright reds of the shade known as Tuskish red, more or less, the yellow in that would have assimilated and sucked up, as it were, the sallowness of her skin, and made it look white by contrast. In certain delicate shades of dove-gray a trained eye detects a flush of pink, and the reason why such gray, worn by a woman, blonde or dark, but with a transparently rosy skirt, should be so entrancingly becoming, is not hard to find. To iron-gray hairs, and the more leaden hues of complexion which come with the passing of youth and maturity, what are more invariably becoming than white and black and their composite gray? It is not alone the soberness of these hues that then recommend them. The principal cause lies further back, in an unconscious perception of the fundamental harmony between the tints of nature in this case and the tints suggested by custom and common sense. Rosy blondes and women who have rather florid complexions look well in various shades of purple and lavender, because the red in both absorbs the flush in the skin and whitens its effect. A sallow skin in juxtaposition to these colors looks simply muddy, on the other hand, as there is nothing in its blended tints to correspond with the components of the hues themselves. In short, no garment of any sort, not even an accessory to the toilet, should be chosen without reference to this underlying principle of harmony in color if a woman wish to make the best of herself. Attentive observance of the idea soon develops a subtle power of distinguishing the various components of a color in the best trained eye. The marvel is only, in view of the enormous advantage thus gained for controlling results, that the faculty should have been suffered, in the large majority of instances, to remain so dormant, so undeveloped.

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

June.

MEAT.—Beef, lamb, mutton, ham, kidneys, liver, sausage, veal.

GAME AND POULTRY.—Pigeon, chicken, duck.

FISH.—Anchovy, bass, bluefish, blackfish, cod, eels, clams, flounder, haddock, halibut, herring, lobsters, mackerel, mussels, perch, porgie, prawn, salmon, shad, turtle, trout, sturgeon, whiting, weak-fish.

VEGETABLES. — Beans, cucumbers, carrots, cauliflower, lettuce, onions, parsley, parsnips, potatoes, shallots, spinach, turnips, radish, rhubarb.

FRUITS. — Cherries, strawberries, bananas, pineapples.

PRACTICAL RECIPES.

CHESTNUT SOUP.—Shell a pound of chestnuts and boil them until the skins come off readily, then cover them with clear soup and let them boil until they are mealy; mash through a sieve and put the purée back on the fire; add two quarts of water and let it simmer for nearly half an hour, stirring frequently; skin, add a good lump of butter, season and serve.

SCALLOPED SWEET POTATOES.—Pare and slice some raw sweet potatoes. Butter a pudding dish, put in a layer of potato, sprinkle with bits of butter and granulated sugar; put in another layer of potato, then sugar and butter as before until the dish is filled. Over all pour enough cream or very rich milk to cover the potato. Set the dish in a pan of water, and let it cook on top of the stove until the potato is soft, then brown in the oven; grated nutmeg may be also used if liked.

BROILED SWEET POTATOES.—Raw and boiled potatoes are served in this manner. Cut the raw potatoes in thin slices, brush melted butter over them and also over the wire broiler to prevent their sticking to it; broil them a dark brown; boiled sweet potatoes need to be but slightly broiled, just enough to warm through and at the same time to show the marks of the broiler.

CODFISH CROQUETTES.—Pick a pound of salt codfish to pieces and let it soak for several hours in cold water, overnight if the croquettes are for breakfast. In the morning dry it and add to it the following cream sauce: Put two large tablespoonfuls of butter and three of flour in a saucepan and cook together; add a cupful of hot milk gradually, and rub smooth; add the beaten yolks of two eggs and the codfish, season with salt and pepper, cook for a few moments and pour into a dish to cool. Make into croquettes and fry in boiling lard.

CAULIFLOWER, TOMATO SAUCE.—Trim a head of cauliflower neatly and let it stand in salted water head downward, three-quarters of an hour; then put it in slightly salted fast boiling water and boiled just enough to be cooked, but not mushy when pressed between the finger. Test it with a long needle. After twelve minutes' boiling remove the scum that arises or it will discolor the cauliflower. Let it drain a moment. Put in the centre of a dish a liberal quantity of well-made hot tomato sauce; add the cauliflower and serve.

PRINCESS POTATOES.—Peel and boil four potatoes and let them get as dry as possible. Mash them through a sieve, and to a pound of potato put one and a half yolks of egg, one and a half large spoonfuls of butter, two large spoonfuls of Parmesan cheese, salt and cayenne pepper. Mix all together while hot. Let the mixture cool; then form into little rolls, using a very little flour to prevent sticking. Put the rolls, which should be about two inches long and one across, on buttered tins and bake them a nice brown. Dish up, pour melted butter and chopped parsley over them and serve.

CHOPPED HAM SANDWICHES.—Take a cupful of finely chopped cold boiled ham, the yolks of six hard-boiled eggs and a teaspoonful of French mustard. Mix the mustard well into the eggs, add the ham, and spread it between layers of thin buttered bread.

ELECTRICAL QUACKERY.

A CAUTION AGAINST A POPULAR HUMBUG.

Electricity is a word to conjure with. There is a something mysterious and awesome about its manifestations that excites the imagination of the untaught multitude, and prepares it to accept anything as possible when this protean agent is called upon to stand sponsor for it. It is, therefore, the most natural thing in the world that the electric field should be the very stronghold of quackery. It is most unfortunate that this should be the case, for, legitimately employed, electricity is at once one of the most powerful as well as beneficent curative agents known to the physician and surgeon. In several classes of physical ailments, notably in those affecting the nervous system, and in rheumatic affections, at once the most obscure in their origin and the most difficult to cure, it is almost unanimously agreed that the application of mild electric currents of an interrupted character affords relief, and frequently brings about a permanent cure where medication has signally failed. The forms of apparatus devised for the application of the electric current have been greatly improved and brought to a condition of high efficiency, and only the prevailing ignorance of the first principles of electric science, and the pernicious habit among a large class of the people of self-dosing and self-doctoring, are responsible for the electrical quackery that flourishes in our midst in the full tide of prosperity. In this classification belong the innumerable (so-called) electrical appliances for wearing upon the body—electrical pads for various organs, magnetic belts and chains, electro-magnetic shoes, and the like, to say nothing of electric combs and brushes, all and singular, claimed to possess the power of reviving the vital forces and rejuvenating the wearer. To those who may be disposed to lend a willing ear to the marvelous claims made for these paraphernalia of quackery, or to be deluded by the pictures of male and female persons bedecked with appliances from which electric sparks are being emitted with dazzling effect, we would give the advice of *Punch*—Don't! They are the veriest humbugs and absolutely worthless for their pretended purposes. We are fully prepared to admit that instances may be cited where some apparent benefit has been derived from these things, but such cases can be explained most rationally to be due to the influence of the imagination, and the same result would have been reached by other and equally worthless

agencies, such as the wearing of amulets, talismans, and the like, which is extensively practiced among the ignorant and credulous. The safe course to all who know nothing about electricity and its laws and manifestations, and who may be tempted by the glowing accounts issued in behalf of such trumpery humbugs as those above enumerated, is to ask medical advice before yielding to temptation.—*Manuf. and Builder.*

SOFT SOAP AND HARD.

ELOQUENCE OF A BOWERY FAKIR BEFORE AN EAST SIDE AUDIENCE.

A street fakir of the finest type stood at the corner of the Bowery and a cross street, New York, and addressed the attentive throng with all the rhetorical flourish of a United States Senator. "I was once a poor boy," said he, "with only two cents in my pocket, and I found myself here in this great city without a home and without a friend. May the fates preserve you from any such hardships as I saw, dear gentlemen! Barefooted, hungry, sleeping on the cold ground under the unsympathetic stars, eating the crumbs thrown to me from the tables of the rich, I was indeed a blighted being. I did my best to get employment, but there was no room for me, and I began to contemplate suicide. That was cowardly of me, gentlemen, I will admit, but I had been made a coward by my privations. I was not myself, and my suicidal purpose was the mad despair of a half insane youth. Yes, I was determined to commit suicide, and was starting in search of a secluded dock, where I could plunge into the cruel river without the danger of being rescued, when a piece of good fortune befell me which changed the whole course of life. As I was passing along the Bowery my attention was attracted by the voice of a gentleman who stood on a corner just above where I am standing now. He had a small black bag with him, very similar to the one I am carrying, and in this bag were small cakes of soap, which the gentleman was offering for sale at twenty-five cents a cake. Now, I did not much stand in need of soap at just that moment, notwithstanding the very thorough bath I was about to give myself, and I should not have stopped to listen to that gentleman had I not perceived that he was offering a very remarkable inducement to the public to buy his wares. Will you believe it, gentlemen, in many of the packages of soap contained in that bag were wrapped greenbacks ranging from the one to the five-dollar denomination! I was seized with an immense longing to try my luck in that soap lottery. Providence was watching me at that moment. The soap vender looked down and saw my sad face and tattered garments. 'There is a lad,' said he, 'whom I should like to help. He shall be permitted to draw a cake of soap from this bag without charge, and we shall see what his fortune will be.' I drew, gentlemen, as I was directed, and, joy of joys! there was a five-dollar bill in my cake of soap. A year later I had $1,000 in the bank, and now I am proud to say life is a perpetual delight. So much do I feel my indebtedness towards the gentleman who saved me that I, too, have taken up the philanthropic work of distributing bank bills among the needy, and I always make it a practice to precede my sales by allowing some poor, ragged boy in my audience to draw a cake of soap from the bag free of charge. Ah! there is a most unhappy face. My boy, select a cake from the bag; it will cost you nothing." The poor, miserable lad thus importuned did as he was directed, and as the crowd watched him unfold the paper wrapper it was seen that a five-dollar bill was inside. "You see," exclaimed the fakir, unwrapping several of the cakes to display the money within, and then throwing them back into the bag, "you can scarcely help drawing a prize." Instantly there was a rush in the soap business. As fast as the fakir could make change coins fluttered into his hands. The excitement continued for a number of minutes and then some one in the crowd began to complain that no prizes were turning up. It was then that the fakir discovered a policeman approaching, and hastily shutting his bag he hurried down the cross street, and turning sharply to the right after going a short distance, disappeared into a liquor saloon. He ordered whiskey for himself, and in a few minutes he was joined by the ragged boy who had been allowed to draw the five-dollar prize. His profits on the soap must have been fully $10.—*Soap and Perfumery Journal.*

THE STARFISH.

FIVE INDIVIDUALS IN ONE, WITH MANY LIVES.

"The attack of a starfish upon an oyster may be likened to an assault by organized conspirators, inasmuch as each of these five-fingered animals is composed of five distinct individuals," said a scientist to a writer, and he added: "Each of the starfish's five arms has its own mind, nervous system and thoughts, such as they are, and all five nerve systems simply meet in the centre where the arms are joined. Thus it may be said that the mental guidance of this complex creature and the management of its affairs are intrusted to a board of five members, who have communication with each other, but act without the intermediation of a presiding officer. Now, is it not wonderful that such a quintet should be able to manage its affairs so well and with such agreement of purpose in everything? Supposing that each of the five individuals attempted to go where it listed, without giving any heed to the others, the animal could not reach a choice bit of food, espied from afar with the eye of one of its members, nor travel in any direction with a purpose in view. But, as a matter of fact proved by observation, when a starfish is spying after its food it lifts the ends of its five arms so that the eye beneath each extremity may get a view of things in the neighborhood, and if any object worth going after is discovered, all the many hundreds of

Buffalo Lithia Water, Spring No. 2, in Bright's Disease, Gout, Stone in the Bladder, and Diseases Generally of Uric Acid Diathesis, Etc., Etc.

DR. WM. A. HAMMOND, of Washington, D. C., Surgeon General U. S. Army (retired), Professor of Diseases of the Mind and Nervous System in the University of New York, etc.

"I have for some time made use of the BUFFALO LITHIA WATER in cases of AFFECTIONS of the NERVOUS SYSTEM, complicated with BRIGHT'S DISEASE OF THE KIDNEYS or with a GOUTY DIATHESIS. *The results have been eminently satisfactory.* Lithia has for many years *been a favorite with me in like cases, but the* BUFFALO WATER CERTAINLY ACTS BETTER THAN ANY EXTEMPORANEOUS SOLUTION of THE LITHIA SALTS, and is, moreover, better borne by the stomach. I also often prescribe it in those cases of CEREBRAL HYPERÆMIA resulting from OVER MENTAL WORK—in which the condition called NERVOUS DYSPEPSIA exists—*and generally with* MARKED BENEFIT."

DR. WM. B. TOWLES, Professor of Anatomy and Materia Medica, in the Medical Department of the University of Virginia.

"BUFFALO LITHIA SPRINGS, No. 2, belongs to the ALKALINE or, *perhaps, to the* ALKALINE SALINE Class, *for it has proved far more efficacious in many diseased conditions than any of the simple* ALKALINE waters.

"*I feel no hesitancy whatever in saying that in* GOUT, RHEUMATIC GOUT, RHEUMATISM, STONE *in the* BLADDER, and in all diseases of URIC ACID DIATHESIS, *I know of no remedy at all comparable to it.*

"*Its effects are marked in causing a disappearance of* ALBUMEN *from the urine. In a* single case of BRIGHT'S DISEASE *of the* KIDNEYS, I witnessed *decided beneficial results from its use, and from its action in this case I should have great confidence in it as a remedy in certain stages of this disease.* In DYSPEPSIA, especially that form of it in which there *is an excessive production of* ACID *during the process of nutrition*, in some of the PECULIAR AFFECTIONS *of* WOMEN, notably in SUPPRESSION of the MENSES, and in CHRONIC MALARIAL POISONING, etc., I have found it highly efficacious."

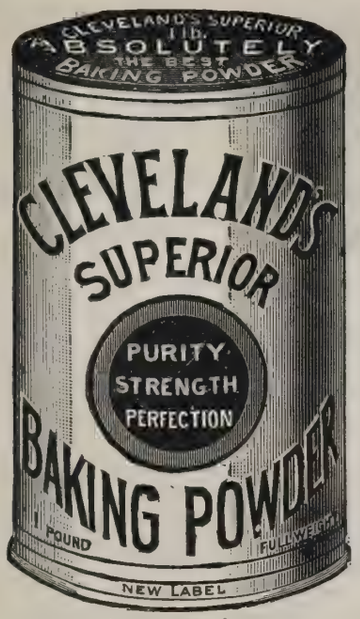
DR. G. HALSTEAD BOYLAND, late Professor of Surgery, Baltimore Medical College, late Surgeon French Army (Decorated), Member Baltimore Academy of Medicine, Member of American Medical Association.

"In BRIGHT'S DISEASE of the KIDNEYS, ACUTE or CHRONIC, BUFFALO LITHIA WATER, Spring No. 2, is, in my experience, *without a rival*, whether in the PARENCHYMATOUS form or INTERSTITIAL NEPHRITIS. In cases in which the ALBUMEN in the URINE reached as high as 50 per cent., I have known it under a course of this water gradually diminish and finally disappear, at the same time other alarming symptoms were relieved and the sufferers restored to health.

"In STONE in the BLADDER of the RED LITHIC ACID and the WHITE PHOSPHATIC DEPOSIT, the SOLVENT power of this water is *unmistakable.*"

Water in cases of one dozen half gallon bottles, $5.00 f. o. b. here.

THOS. F. GOODE, Proprietor, BUFFALO LITHIA SPRINGS, VA.



As your grocer for

The Cleveland Cook Book,

(free), containing over 350 proved receipts. If he does not have it, send stamp and address to the Cleveland Baking Powder Co., 81 Fulton Street, New York, and a copy will be mailed you. Please mention this paper.

25 CTS PISO'S CURE FOR 25 CTS.
CURES WHERE ALL ELSE FAILS.
Best Cough Syrup. Tastes good. Use in time. Sold by druggists.
CONSUMPTION

Armour's

Extract of BEEF.

The best and most economical "Stock" for Soups, Etc.

One pound equals forty-five pounds of prime lean Beef.

Send to us for our book of receipts, showing use of **ARMOUR'S EXTRACT** in Soups and Sauces.

ARMOUR & CO., Chicago.

Fine Table Wines

From our Celebrated Orleans Vineyard.

Arpad Haraszthy & Co.

Producers of the

ECLIPSE

CHAMPAGNE,

530 Washington St.

SAN FRANCISCO.

GENERAL AGENCIES:

NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOSEPH R. PEEBLES' SONS CO., 73 West Fourth Street
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave
HONOLULU, H. I.: HAMILTON JOHNSTON.

The Key to Success



in washing and cleaning is *Pearline*. By doing away with the rubbing, it opens the way to easy work; with *Pearline*, a weekly wash can be done by a weakly woman. It shuts out possible harm and danger; all things washed with *Pearline* last longer than if washed with soap. Everything is done better with it. These form but a small part of the—Why women use millions upon millions of packages of *Pearline* every year. Let *Pearline* do its best and there is no fear of "dirt doing its worst."

Turn the Key

On the peddlers and grocers who tell you "this is as good as," or "the same as" Pearline. IT'S FALSE; besides, Pearline is never peddled

236 JAMES PYLE, New York.

sucker-like feet beneath the five arms are seen to push out together in the direction of the morsel desired. There is a unity of intention among the partners that implies unmistakably a conscious sharing of aim and design. The same thing is shown by the way many starfish have of letting themselves drop from steep rocks and cliffs, in order to save the trouble of laborious climbing down. In such cases, before they relinquish their hold and drop, they let go with three or four arms, holding fast until the last moment with the remaining one or two, as if it were to calculate the leap. My observations on this subject have inclined me to think that matters of concerted action with starfish have not infrequently to be effected by first obtaining the assent of an individual ray that is willing. It is known that these creatures sometimes divide themselves voluntarily into a three-armed and a two-armed portion, which may be regarded as the violent dissolution of business, and domestic relations once happy but grown inharmonious. A starfish will often cast off one of its arms and leave it behind, perhaps because the member is not found agreeable to live with. If a rubber band or a string is fastened around an arm of one of these animals, and it cannot push the annoyance off with its other arms, the starfish will throw the troublesome arm away, not desiring to retain the companionship of such a cripple. Starfish are like human beings in many ways. Then the animal which has thus deprived itself of a ray grows a new one in place of the old. As for the arm that is dropped, it promptly proceeds to grow four new arms, thus becoming a whole starfish itself. Being the biggest, it is presumably for a long time the boss of the five, which must be gratifying. A few years ago people who caught starfish in the oyster beds destroyed them, as they thought, by cutting them in halves and throwing them overboard, but the process was not very effective, inasmuch as every one thus treated promptly became two."

MICROSCOPIC LENSES.—It is stated that an immense improvement has recently been effected in the manufacture of glass for optical instruments by means of the addition to the ordinary materials of phosphorus and chlorine, which in some as yet unexplained way cause the glass to be very much more transparent, and enable it to receive a much higher degree of polish than any optical glass hitherto manufactured. Thus microscopes can be made which will render objects of the diameter of only the one eight-millionth of a millimeter visible, whereas with the best instruments now in use the diameter of the smallest object that can be seen is one sixteen-thousandth of a millimeter. This news, we fear, is too good to be true.

ADULTERATIONS IN ROME.—The Roman authorities propose to cure the commercial vice of adulteration by the publication in the daily papers of the names of all makers and venders of food substances which are adulterated or injurious to health.

CALIFORNIA TIN.—The first ingots of tin ever made in California lately arrived in San Francisco from the mines of the San Jacinto estate, Cajalco, San Bernardino County. These are what were known as the Temescal tin mines, which were discovered many years ago. Litigation and other causes have prevented the claims from being developed, but now an English company has purchased and equipped them for actual work. Oil fuel is used in the furnace, this being much cheaper in that region than coal. The experiments with the reverbatory furnace and oil fuel seem to be successful.

WATCH GLASSES.—It is interesting to know something of the details and labor connected with the production of these handy adjuncts to the laboratory. The glass is blown into a sphere about a meter in diameter, sufficient metal being taken to give the required thickness, as the case may be. Disks are then cut from this sphere with the aid of a pair of compasses having a diamond at the extremity of one leg. There is a knack in detaching the disk after it has been cut. A good workman will cut 6,000 glasses in a day.

POISONOUS DRY GOODS.—The British consul at Christiania, in Norway, about four months ago forwarded a letter calling the attention of the Foreign Office to the fact that, owing to the English printed fabrics containing arsenic, there had been a great decline in the quantity of such goods imported into Norway, and the British printed cloths were getting a bad reputation in consequence of their containing such a large excess of arsenic. This letter was forwarded to the Manchester Chamber of Commerce, which procured samples of the goods in question, and they were handed over to Mr. Ivan Levinstein, who had the samples examined, and they were found to contain arsenic in large quantities.

PHONOGRAPHY AND STENOGRAPHY.—The phonograph, it seems, is destined to seal the fate of the stenographer, said an author of note yesterday: "A few weeks ago I used to hurry down town to keep an engagement with my stenographer and he in turn to meet the typewriter later. Now I take my leisure in the morning, and while dressing talk for a half hour or more into my phonograph, box up the cylinder and send it to a typewriter. She takes down everything that the cylinder says, and before noon the same day I receive a neat typewritten copy of my earliest thoughts. If anything strikes my mind forcibly during the night, or if I am troubled with insomnia, I place the phonograph by my bedside and start the cylinder revolving. Is it expensive? Why, bless my soul, no! not a tenth of what it would be were I to engage a stenographer. It costs me $40 a year for the rent of my phonograph and about $2 a dozen for my cylinders. Not very high for the ease and comfort it affords, is it?"

BICYCLES

GIVEN AWAY TO BOYS AND GIRLS!

AN OPPORTUNITY OPEN TO ALL.

The Analyst Publishing Company being desirous of largely increasing their subscription list, will furnish every one with a beautiful Safety Bicycle, ABSOLUTELY FREE, in return for a few hours' canvassing.

To every boy and girl who secures 75 subscribers for the American Analyst at $75, we will give a splendid

$40.00

NONPAREIL

SAFETY BICYCLE.



These bicycles are adapted in size to boys, but are strong enough to carry a man. A boy's bicycle should be a strong one. They are manufactured by the Overman Wheel Co., the makers of the celebrated Victor Bicycle, and have the full guarantee of the makers.

The following is a brief description of the NONPAREIL SAFETY; 26-inch wheels; ball bearing all around, including pedals; solid crescent rims; double tangent spokes; three-fourths inch tires; cranks, three throw, $4\frac{1}{4}$ to $5\frac{3}{8}$ inches; guards to both wheels; tool-bag, oiler and wrench. Finished in bright enamel, all exposed metal heavy nickel-plate on copper.

In selecting these machines as a premium, we have disregarded cheapness and selected a Bicycle which is serviceable, and the makers of which have an established reputation for building the best Bicycle that money, machinery and brains can produce. We are actually furnishing the Bicycles and Papers at less than cost, but hope by stimulating active and successful canvassing, and thus enlarging our subscription lists, to make an eventual profit. We positively guarantee these bicycles to be just as here represented. They will be shipped by express f. o. b. in New York.

Subscription orders must be made out plainly and legibly, and sent as fast as secured, addressed to

THE ANALYST PUBLISHING CO., 19 Park Place, New York.

WATCHES.

EVERY one wants a watch, and naturally a good watch that keeps accurate time, presents a handsome appearance, and is inexpensive. If such a watch can be found of American manufacture, it is an additional appeal to our patriotism. Just such a watch as this ideal The Analyst Publishing Company is enabled to offer as a Premium to its readers. Having some large advertising contracts we have been enabled to procure the movements of the manufacture of the best known American watch factories, namely, the Waltham, Elgin, Hampden and Illinois Watch Companies. These movements are adapted for both ladies' and gentlemen's watches, and are warranted by the makers. These movements have seven jewels, patent lever movement, chronometer balance, patent safety pinion, sunk hard-enameled dial, straight line visible palette, stem winders, hand set; in fact, contain all the latest improvements and can be readily cleaned or repaired by any ordinary good watchmaker. They can be regulated to run as close as any movement.



It is needless to say that to case these movements in solid gold cases would make them too expensive, yet they are cased in what are known as gold filled or stiffened "Ladd" cases, and are warranted to be 14 karat gold, made from two sheets of 14 karat gold overlaying fine composition metal, with regular jointed caps, covers and bezels, and to wear at least five years. They are not plated, nor rolled gold, but actual 14 karat gold cases, thin of course, but stiffened and strengthened by being filled with this fine composition metal. They are finished in the same manner, engine turned and engraved as solid gold watches, and wear and look just the same. No one but an expert can tell them from a solid gold watch. These watches are made both open face and hunting case style, in gentlemen's or ladies' sizes. For gentlemen we recommend plain engine-turned cases; for ladies, a handsomely engraved case.

How to Obtain One of these Watches.

These watches are not to be purchased from us at any price. Send us a club of 25 subscribers to the American Analyst, and $25, the regular subscription price, and one of these watches (your choice of style and size) will be immediately forwarded, post-paid and registered, to your address. You need not wait until you have your 25 subscribers all together, but forward them as you get them and they will be credited to you, and when the number is complete the watch will be sent. A subscription for two or three years will be counted as two or three subscribers.

As these watches are retailed by jewelers at not less than $25, it will be seen that we are offering a real premium with the sole object of increasing our circulation, and that by taking advantage of our offer any one can obtain a good, reliable and handsome watch without cost. As the number of these watches at this price is limited, it is advisable to take steps at once to procure a bargain.

THE ANALYST PUBLISHING CO., 19 PARK PLACE, NEW YORK.

HOSMER, CRAMPTON & HAMMOND,

NO. 43 COMMERCIAL STREET,

BOSTON.

COMMISSION MERCHANTS,

HAY, STRAW, FLOUR & GRAIN.

E. B. HOSMER, G. W. CRAMPTON, BENJAMIN HAMMOND, A. L. ROBINSON.

BOSTON HAY AND STRAW MARKET.

Hay, choice to fancy, in large bales.	$15.50 to	$16.50
Hay, choice to fancy, perpetual pressed bales	14.50 to	15.50
Hay, fair to good	14.00 to	15.00
Hay, poor to ordinary	12.00 to	13.00
Hay, Clover and Clover mixed	11.00 to	12.50
Hay, swale	8.50 to	9.00
Straw, Rye, good to prime	16.50 to	17.50
Straw, Oat	8.00 to	

BOSTON, June 20, 1891.

Receipts for the week are 292 cars of Hay and 45 cars of Straw; corresponding week last year, 282 cars of Hay and 48 cars of Straw. Receipts of hay are fairly liberal, but the market is firm for all grades; some choice cars selling above our quotations. As is usual on a strong market, hay is not graded as close, and the medium grades sell nearer up to the price of the best than would be possible on a dull market.

Receipts of Rye straw are in excess of demand and market is dull and easier.



Subscription $1.00 per year. Now is the time to subscribe.

THE LABORATORY.

To Inventors, Manufacturers and Applicants for Patents

The AMERICAN ANALYST may be consulted upon all matters involving theoretical or applied chemistry. Advice and opinions given. Analyses and assays made. Patents perfected and secured. Terms reasonable.

Address, AMERICAN ANALYST,
10 Park Place, N. Y.

THE ORIGINAL AND GENUINE
(WORCESTERSHIRE SAUCE).



LEA & PERRINS' SAUCE

In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—

Lea & Perrins

Beware of Imitations; see that you get Lea & Perrins'

For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS, NEW YORK.

Tabasco Pepper Sauce

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced, by connoisseurs, to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY,
NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

HARTSHORN'S SELF-ACTING SHADE ROLLERS

NOTICE SCRIPT NAME OF Stewart Hartshorn ON LABEL, AND GET THE GENUINE

HARTSHORN



A HIGH-GRADE PIANO

AT A VERY MODERATE PRICE.

NEW DESIGNS. FANCY WOODS.

Terms Easy. + Monthly Instalments.

TWO, THREE AND FOUR PEDALS.

Catalogues, Prices, Terms, Etc., sent to any address.

EVERY PIANO WARRANTED 5 YEARS.

(Mention this Paper.)

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,

HOWARD STREET, BOSTON, MASS.

GOLD MEDAL, PARIS, 1878.



W. BAKER & Co.'s Breakfast Cocoa

from which the excess of oil has been removed,

Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

"BILLET"

are

Carefully Selected French Sardines, Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS.

BROMO SODA.

Useful in Nervous Headache, Sleeplessness, Excessive Study, Over Brainwork, Nervous Debility, Mania, Etc.

DOSE—A heaping teaspoonful in half a glass of water, to be repeated once after an interval of thirty minutes, if necessary. Each teaspoonful contains 30 grs. BROMIDE SODIUM and 1 gr. CAFFEIN.



SUPPLIED BY ALL DRUGGISTS

Ask for (Bromo-Soda, Warner & Co.) and take no other "Bromo."

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W ROBINSON & SON,
184 Greenwich St., N. Y.

HAMMOND'S
CELEBRATED
Calumet Oleomargarine

Strictly pure, cheap and healthful.
Ask your grocer for it.
Put up in packages of all sizes, also prints and rolls.

C. H. HAMMOND CO..
607 to 615 THE ROOKERY,
CHICAGO.

Also offices at Boston, South Omaha, Neb., and Hammond, Ind.

BLAIR'S PILLS.



Great English Remedy for GOUT, RHEUMATISM and KIDNEY COMPLAINTS.
SURE, PROMPT and EFFECTIVE.
Large Box, 34; Small, 14 Pills.
At all Druggists, and
224 WILLIAM STREET, NEW YORK.

Pure LAGER BEER,
"IMPERIAL" and "CULMBACHER"
Brewed & Bottled
SPECIALLY FOR
HOTELS, CLUBS
AND
PRIVATE FAMILIES
BY
Beadleston & Woerz
291 W. 10th St. New York.
Orders by Postal Card promptly attended to.

SWIFT'S
CHOICE
Chicago Dressed Beef
AND
MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,
UNION STOCK YARDS,
CHICAGO, ILLS.

ESTABLISHED IN LONDON, 1831.
DEAN'S
PATENT
Ardenter Mustard



W. G. DEAN & SON,
361 & 363 WASHINGTON STREET; 84, 86, & 88 NORTH MOORE STREET, N.Y.

We can save you Fifty Dollars when you Build. See



A complete set of Plans to build from, simply state about price of dwelling desired. 25 cts. in stamps. Our book "Beautiful Homes." 25 cts. Our monthly book "The National Builder," 25 cts. Address
The National Builder, Adams Exp. Bldg., Chicago, Ill.

Subscriptions $1 per year. Now is the time to subscribe.

THE GREAT AMERICAN TEA COMPANY
LADIES
GET UP ORDERS.
Entire New Departure.
A HANDSOME PRESENT TO EVERY SUBSCRIBER.
THE GREATEST INDUCEMENTS EVER KNOWN TO INTRODUCE OUR NEW GOODS.

If you enjoy a cup of **Delicious Tea** send in your orders. 3½ lbs. Fine Tea by mail on receipt of $2 and this "ad". Beautiful premiums given away with $5 orders and upwards. The **most extraordinary bargains** ever offered, during the next thirty days. China Tea Sets and Lamps with $10, $15 and $20 orders to introduce our excellent **New Crop Teas.** Formosa and Amoy, Oolong, Congou, English Breakfast, Japan, Imperial, Young Hyson, Gunpowder, Sun Sun Chop and Mixed. Good mixed teas 20c. per lb. Headquarters in United States for Fine Teas. One pound of our tea will go farther than three pounds of trash. Thirty years' national reputation for selling **Pure Goods Only.**

THE GREAT AMERICAN TEA COMPANY,
P. O. BOX 289. 31 and 33 Vesey Street, New York.

We shall be glad to supply our readers with any periodical published at club rates.

Send us a postal naming periodical and we will quote you prices.

ANALYST PUBLISHING CO.,
19 Park Place, New York.

INSTRUCTIONS TO SUBSCRIBERS.

The **Names of all Subscribers** are registered as soon as received, and paper is always promptly forwarded.

Postage.—The postage to all parts of the United States and Canada is paid by the publisher.

Remittances of small sums may be made with comparative safety in ordinary letters. Sums of one dollar or more must be sent by registered letter or P. O. money order, otherwise we cannot be responsible for same. Silver must not be sent in a letter.

Postage Stamps will be received for the fractional part of a dollar, and in any amount when it is impossible for patrons to procure bills, but you must send one or two-cent stamps only.

SUBSCRIPTIONS.—The AMERICAN ANALYST will be sent one year to any subscriber for ONE DOLLAR. New subscriptions can begin at any time.

We Stop the Paper at the expiration of the time paid for unless a renewal of subscription is received. Those whose subscriptions have expired must not expect to continue to receive the paper unless they send the money to pay for it.

Change of Address.—Subscribers wishing their addresses changed must invariably give their former as well as new address.

Missing Numbers.—It occasionally happens that numbers of our paper sent to subscribers are lost or stolen in the mails. In case you do not receive any number when due, write us a postal card and we will cheerfully forward a duplicate of the missing number.

Most Important of All.—In every letter that you write us, never fail to give your full address, plainly written—name, post-office, County and State.

Address all letters to

THE ANALYST PUBLISHING CO.,
19 Park Place, New York.

GRAND PREMIUM OFFER!

A SET OF THE

WORKS OF CHARLES DICKENS,

In Twelve Large Volumes,

Which we Offer with a Year's Subscription to this Paper for a Trifle More than Our Regular Subscription Price.



CHARLES DICKENS.

Wishing to largely increase the circulation of this paper during the next six months, we have made arrangements with a New York publishing house whereby we are enabled to offer as a premium to our subscribers a **Set of the Works of Charles Dickens, in Twelve Large and Handsome Volumes,** with a year's subscription to this paper, for a trifle more than our regular subscription price. Our great offer to subscribers eclipses any ever heretofore made. Charles Dickens was the greatest novelist who ever lived. No author before or since his time has won the fame that he achieved, and his works are even more popular to-day than during his lifetime. They abound in wit, humor, pathos, masterly delineation of character, vivid descriptions of places and incidents, thrilling and skillfully wrought plots. Each book is intensely interesting. No home should be without a set of these great and remarkable works. Not to have read them is to be far behind the age in which we live. The set of Dickens' works which we offer as a premium to our subscribers is handsomely printed from entirely new plates, with new type. The twelve volumes contain the following world-famous works, each one of which is published *complete, unchanged, and absolutely unabridged:*

DAVID COPPERFIELD,
MARTIN CHUZZLEWIT,
NICHOLAS NICKELBY,
DOMBEY AND SON,
BLEAK HOUSE,
LITTLE DORRIT,
OUR MUTUAL FRIEND,
PICKWICK PAPERS,
BARNABY RUDGE AND CHRISTMAS STORIES,
OLIVER TWIST AND GREAT EXPECTATIONS,
THE OLD CURIOSITY SHOP AND THE UNCOMMERCIAL TRAVELER,
A TALE OF TWO CITIES, HARD TIMES AND THE MYSTERY OF EDWIN DROOD.

The above are without question the most famous novels that were ever written. For a quarter of a century they have been celebrated in every nook and corner of the civilized world. Yet there are thousands of homes in America not yet supplied with a set of Dickens, the usual high cost of the books preventing people in moderate circumstances from enjoying this luxury. But now, owing to the use of modern improved printing, folding and stitching machinery, the extremely low price of white paper, and the great competition in the book trade, we are enabled to offer to our subscribers and readers a set of Dickens' works at a price which all can afford to pay. Every home in the land may now be supplied with a set of the great author's works.

GLENN'S
SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,

C. N. CRITTENTON,
115 FULTON STREET,
NEW YORK.

Be progressive and keep abreast of the times. Avoid dyspepsia by using **Lard Compound** and **Cottolene,** a substitute for lard.

The highest medical authorities pronounce them healthful; and expert cooks commend them.

Our **Clairette** brand of cotton oil soap is the purest and best laundry soap in the market; as pleasant to the hands as genuine castile.

N. K. FAIRBANK & CO.,
CHICAGO AND ST. LOUIS.

OUR GREAT OFFER
TO SUBSCRIBERS
TO THE
AMERICAN ANALYST.

We will send the **ENTIRE SET OF DICKENS' WORKS,** *in* **TWELVE VOLUMES,** *as here described, all postage prepaid by ourselves, also* **THE AMERICAN ANALYST** *for* **ONE YEAR,** *upon receipt of* **$1.50,** *which is only* **50** *cents more than the regular subscription price of this paper.* Our readers, therefore, practically get a set of Dickens' works in twelve volumes for only **50** cents. This is the grandest premium ever offered. Up to this time a set of Dickens' works has usually been $10.00 or more. Tell all your friends that they can get a set of Dickens' works in twelve volumes, with a year's subscription to **THE AMERICAN ANALYST** for only **$1.50.** Subscribe now and get this great premium. If your subscription has not yet expired, it will make no difference, for it will be extended one year from date of expiration. We will also give a set of Dickens', as above, free and post-paid, to any one sending us a club of three yearly subscribers.

ADDRESS:

THE ANALYST PUBLISHING CO.
No. 19 PARK PLACE,
NEW YORK.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 27. NEW YORK, THURSDAY, JULY 2, 1891. WHOLE No. 227

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - - $1 per year.
Single Copies, - - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.
Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.
Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,
H. LASSING, M. D., T. P. McELRATH, *Editors.*
No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

Adulteration in Massachusetts 315
Astronomical Progress 316
British Waste Paper 314
Domestic Dietetics 318
Editorials 313
Microscopists in Session; Dried Bananas; Appropriating a Name; Suicidal Advertising; Mineral Water Frauds.
Fire Crackers 314
Industrial Education 315
Life and Its Conditions 316
Nerves and Narcotics 318
Stale Bread 314
Superstition 317

MICROSCOPISTS IN SESSION.

The American Society of Microscopists, of which the genial Frank L. James of St. Louis is President, will hold its fourteenth annual meeting in Washington, D. C., August 10, and continue in session five days. Its roll of active members contains about three hundred and fifty names, embracing very nearly every person in the United States who is at all prominent as a microscopist. Its membership consists of two distinct classes, viz.: professional men and students of the natural sciences, who use the microscope in their daily avocations as an instrument of research, diagnosis, or precision; and amateurs, or those who find pleasure and profit in the revelations of the instrument. Many of the latter class, from having early chosen special lines of study and investigation, have acquired high reputations in their respective departments of microscopical research. In its earlier years this class predominated in the membership of the society, but at present the professional element is largely in excess. The qualifications for membership are very simple. The applicant must be a respectable person socially, and interested in the use of the microscope. The advantages of membership are dual in their nature, *i. e.*, general and social, or those which accrue to the individual from associations with others engaged or interested in the same pursuits in any and all walks of life; and special, in that the meetings of the society are to a certain extent educational in their nature. In the "Working Sessions" experts in every department of microscopical technology are engaged in giving manual demonstrations of the details of their lines of work; in the informal evening "conversaziones," the room of every worker who has anything special to exhibit or demonstrate, is open for the reception of all those who wish to witness the demonstration; finally the soirée affords an opportunity of displaying for the benefit of the members, as well as the public generally, all that is most beautiful, interesting and instructive in the cabinets or laboratories of the exhibitors. Of late years the soirées have been attended by many thousands of visitors in every city in which the society has met, and have been regarded as distinguished social as well as scientific events.

DRIED BANANAS.

A new industry is reported to be gaining headway in the tropics. Drying bananas for shipment has been tested in Trinidad, West Indies, with marked success. A report received by the Bureau of American Republics sets forth that the cost of producing a bunch of bananas weighing fifty-two pounds, including the purchase of land, clearing, draining, planting, weeding, cutting, drying, fuel, boxes and packing for market would average only 53 cents. The fruit in drying loses one-third of its weight. When dried it sells readily at 16 cents a pound. Allowing for the loss of weight this would yield $2.72 a bunch—a clear profit for the grower of $2.19. An order for several hundred pounds of the dried fruit, at 12 cents a pound, for the London market has been received at Trinidad. An actual sale of nearly a hundred boxes of the dried fruit has recently been made in Canada at 20 cents a pound. Over one hundred thousand plants have been distributed in Trinidad and Tobago within the last two years. The purchasers were principally large planters, and there is every indication that the industry will be persued on an extensive scale and that dried bananas will soon be an important item in the commerce of the West Indies. The dried fruit can be conveyed to market from remote districts over bad roads without injury, and the risks of handling and of the sea voyage are reduced to a minimum. This is an entirely new and valuable industry. The banana is the most productive of all fruits. Once planted it perpetuates itself, and the trouble is often to get rid of it. Its productiveness is said to be 42 times greater than that of the potato and 131 times greater than wheat. The dried product is not only palatable as a fruit, but is a nutritious article of food. There is practically no limit to the amount that can be produced.

APPROPRIATING A NAME.

The desire to have things appear different from what they seem, often brings trouble and disgrace upon people who to further their present ends foolishly place themselves in false positions. If an individual supposed to be respectable uses the name of a prominent physician without authority, as is alleged in the item of news given below, what confidence can be put in any other statement he may make? The item may also be a lesson to others to teach them that honesty is the best policy.

Sir Morrell Mackenzie, the distinguished British physician, has, through Simon Sterne of this city, his counsel, brought suit for $10,000 damages against the Soden Mineral Springs Co. and the Eisner Mendelson Co., of No. 6 Barclay Street, for the unauthorized use of his name in connection with a proprietary medicine manufactured by them. As a preliminary step Mr. Sterne obtained yesterday from Judge Miles Beach in the Supreme Court a temporary injunction restraining defendants from using Sir Morell's name, and naming Tuesday next as the time for hearing argument why the injunction should not be made permanent. In his complaint Sir Morrell sets forth that such use of his name by defendants on their wrappers, circulars, and advertisements is injurious to his professional standing, and offensive to his feelings. It is, he says, a part of the written and unwritten code of medical ethics throughout the civilized world that a professional physician should have no interest in any proprietary medicine or surgical instrument, and that he shall not recommend patent medicines for indiscriminate use by the public, because no remedy can be safely recommended without knowledge of the special condition and circumstances of the patient, and the publication of such indiscriminate recommendation casts upon the physician the suspicion that he has a personal pecuniary interest in the medicine to the great and irremediable loss of his prestige and professional standing.

SUICIDAL ADVERTISING.

THE LITHIA WATER HUMBUG.—All the widely advertised American Lithia waters combined contain less lithia than many of Carl H. Schultz's mineral waters, which make no claim to be called lithia waters. His Kissingen, for instance, contains 173 times as much lithia as Buffalo.—*Advt.*

When advertisers are so far forgetful of business amenities, as to attack every other business man who may be more or less directly in competition with them, it arouses the suspicion of the public that they dare not depend upon the excellence of their own manufactures in offering them to the public, but strive to sell their goods by throwing mud at their neighbors. Mudslingers are almost always mendacious. Truth does not make a good missile for them and such people have no use for it. We are led to these remarks by an

advertisement of Carl H. Schultz, a manufacturer of alleged mineral waters which the public is asked to believe are made artificially in exact imitation of the natural waters. Seeing that Mr. Schultz's advertisement contains the most remarkable statement that his "Kissingen for instance contains 173 times as much lithia as Buffalo," we forbear from further comment. It may be possible that Mr. Schultz, if brought to proof could easily show that as his Kissingen contained no Buffalo whatever he could readily put 173 or any other number of times more lithia. In any case no one will believe his preposterous statements and therefore his advertisement is a boomerang and suicidal.

MINERAL WATER FRAUDS.

In Paris recently it was discovered that a party was offering some of the mineral waters below the usual prices. They purported to be the natural waters of Vichy, Vals, St. Jean, and other natural springs. The suspicion that something was wrong led to an investigation, and an establishment was found in which a large business was being done in making these waters artificially and counterfeiting all the external appearances in the way of labels, stamping the corks, capsules, etc. The proprietor, M. Monplat, was tried and convicted, and is now enjoying a rest of six months (in prison), and has been depleted in his purse to the extent of a fine of $600 and damages of $1,000, and his assistant to a fine of $20 and imprisonment for fifteen days.—*Pharmaceutical Record.*

We do not need to go to Paris to find fraudulent mineral waters. New York is full of them. There is hardly an artificial mineral water made that even bears a similarity to the natural water it is claimed to be an imitation of. The truth is that very few of the so-called natural mineral waters are what they claim to be. Additions of salts and charging with carbonic acid gas are among the least reprehensible sophistications.

STALE BREAD.

HOW A SHREWD BAKER ESTABLISHED A BIG TRADE.

The following story of the success of a New York baker and his disposal of stale bread is told by the *Herald:* "It has been a question for many years what becomes of the many billions of pins that are made in all parts of the world, and a similar query might be made concerning loaves of bread which have become too stale for use by the ordinary consumer. When bread which has been bought and not eaten confronts the housewife she knows of various uses for it. There are many uses for bread-crumbs in artistic cooking. The French cook can find, it is asserted, a thousand uses for stale bread crumbs. But stale bread in the shop is another thing. Large baking concerns who supply grocers with their product are now making a practice of taking back the unsold supplies of the day before. A few years ago a certain German-American started business with a borrowed barrel of flour. He had a well defined idea of how he intended to secure trade. This idea took the form of giving the grocer a guarantee that all unsold loaves would be taken back at their full wholesale price. This plan worked admirably, for many grocers who had not heretofore handled bread saw an opportunity for a possible profit and no loss. What the baker's original idea for the disposition of his stale loaves was is not very clear, but it did not appear to be the kneading over of the old into new material, as a great many people suppose bakers are in the habit of doing. Under the new order of things grocers began to make inroads into the trade of the small bakers, and the man who started with his owed-for barrel soon extended his business until it occupied a building half a block in length. As there is scarcely a product in the world to-day of which the waste cannot be turned to some profitable use, so it was with the baker's stale loaves. Many of the poor people of the neighborhood got their bread at a reduced rate because it was one day old, but the problem of disposing of the whole stock each day was finally solved by the Italians. One by one they dropped into the bread factory for stale loaves, until finally there was a regular colony of dealers, male and female, who took all they could get at a price which paid the maker for his extra handling, yet much lower than the price given grocers. The large Italian settlements in Williamsburgh and Brooklyn are fully covered by certain of the dealers. Others of them cover the Harlem district. The chief camping-ground of the stale bread vendors, however, is Mulberry Street and its intersections. This is the quarter where the man with the bag of bread can always be sure of selling out. In fact, the supply never equals the demand."

FIRE CRACKERS.

WHENCE THEY COME AND WHITHER THEY GO.

The annual jubilee which the enthusiastic and small American patriot celebrates with the popping off of fire crackers is again at hand. Despite their association with the celebration of American Independence, fire crackers are essentially a Chinese institution, and their importation constitutes a significant item in the commerce between the two nations. The annual receipts of fire crackers in this country are from eight hundred thousand to one million boxes, and orders for these goods have to be sent forward one year in advance. The Chinese manufacturing year begins June 1, and this is about the date when American merchants send forward their order for next year's supply. The usual voyage from New York to Hong Kong is 120 days, so that there are only left, after a passage to China and return, 125 days of the year. Crackers are made principally in Canton and in the country surrounding that city. A cannon cracker factory in the suburbs of Canton is described by an eye witness as follows: The building is of sun-dried brick, with a tiled roof twelve feet from the ground, and this space is divided into an upper and lower apartment, each with the ceiling about six feet high. The interior of the building when visited was strewn with pieces of paper, while vessels containing powder were standing round, the contents of which seemed to be in imminent danger of being exploded, and men, women and children were actively engaged in the manufacture of the goods. The paper needed for the cracker is cut to the required length and then weighed to see that the quantity for each cracker is exactly the same. The instrument used in weighing is of the rudest description, being a stick about two and one-half feet long, suspended from the ceiling by a string, which is attached to the centre of the stick, and a stone is placed as a weight on one end and the articles to be weighed on the other. The paper is rolled into cylindrical form by means of a flat piece of wood held in the hands, and then one hand is creased with a pair of pincers and a string tied into the crease as a temporary means of preventing the powder from running out when the cylinders are placed in a perpendicular position to be loaded. The last named process is as follows: The cylinders are bunched together like cigars turned on end, and then pinched with an awl, and into the aperture thus made the powder is poured from a tin can. Then the stem of the cracker is inserted which consists of a piece of thin, touch paper, with just sufficient powder twisted up in it to make it burn quickly. A piece of paper is temporarily pasted over the end containing the stem for the purpose of preventing the powder from running out, as the crackers are now placed on that end. The string placed temporarily around the pinched end is now removed and clay tamping is hammered into the aperture and then the paper is removed from the stem end and the clay tamping is applied there, which prevents any powder from sifting out. The cracker is now ready for the thin piece of red paper which goes around the outside and completes it. The stems are then very neatly braided together, which forms the crackers into packs, and these are each wrapped in thin paper and ornamented with a red label with pictures of dragons upon it. Red is the festive color of China, and as fire crackers are used principally on festal occasions, that color is rigidly adhered to in the manufacture of these goods. The packs are placed in boxes and in the proportion of forty packs to the box. There is a regular division of labor in the cracker factory, each person having his or her special work to do, and in this they become very expert. The above is a description of cannon cracker manufacture, but the same will apply to the small crackers. The latter, however, are generally made in the rural districts, and are brought down the river to Canton in junks. There is a large home consumption of fire crackers, and the Chinese think that their explosion will ward off evil spirits. They are fired off on numerous occasions, but particularly on the Chinese new year, which is a variable date regulated by the changes in the moon. Foreigners residing in Canton have what they call the Canton salute, which consists in the firing off at one time of six boxes of small crackers and two or three boxes of cannon crackers, and this is given on the departure of some one of their number for home. Of the million boxes of crackers sent each year to this country, a number are reshipped to South America, where they are used on social occasions as well as at public fetes. They are used in the south at Christmas time, and also in Canada on May 24, which is Queen Victoria's birthday. Cannon crackers are made in this country, but the small ones cannot be produced here at anything like the price they can be furnished by the Chinese. Their product is carried half way round the world, pays duty, and is then sold for 85 cents a box. Fire crackers are of very ancient origin. Dr. Williams in his exhaustive work on China, entitled "The Middle Kingdom," says: "No evidence exists of the use of gunpowder as an an agent of warfare until the middle of the twelfth century, nor did a knowledge of its propulsive effects come to the Chinese until the reign of Yunglop in the fifteenth century—a thousand years after its first employment in fire crackers."

BRITISH WASTE PAPER.

WHAT BECOMES OF THE GOVERNMENT WASTE PAPER.

The waste paper branch of the business at her Majesty's stationer office is a very important one, says the London *Daily News.* It is situated in Earl Street, Westminster, a few minutes' walk from the main establishment. In the good old days waste paper went as the "perks" of Government officers. The more they sold the fatter they grew, and the sturdier, we may be sure, they stood up for the Queen and Constitution, and everything that was staid and respectable and conservative. The best of it was that it often happened that the very men who grew fat on waste paper had the ordering of the stock, and the more they ordered the greater were the "perks" of course. It was a delightful arrangement, but it was too good to be permanent, and in 1852 it was ordered that all waste and unserviceable papers, pens, old directories and other publications, and old and useless and worn out stores of every kind should be returned to the Stationery Office, and latterly, therefore, there has been one stream of new stationery from Westminster to all the Government offices in the kingdom, and a return current of used-up material. It pours in in huge van-loads to the establishment in Earl Street, where premises, formerly in the occupation of a marble mason, have been converted into a busy scene of industry in unpacking, sorting, cutting up, repacking and despatching to the paper mills, that may be witnessed all the year round. Till some years ago papermakers contracted for the waste paper here, and entered into a bond to destroy it forth-

with. This proved to be unsatisfactory, and there seemed to be no sufficient security against the leaking out of information that ought to be private and confidential. For some time public waste paper was sent to one or two of the prisons in London, to be torn up and sorted by the prisoners. This was not very successful either, and five years ago the Earl Street premises were taken, and everything now goes there. Vans run into the yard with their paper and books stuffed into gunny bags, which are hauled on up to a top floor and turned out upon tables, the tops of which consist mainly of iron gratings. Young women stand at these tables and sort out the paper into ten classes. Much of the stuff is very dusty, and the table tops are grated, so that as the paper is tossed about the dust may fall down below. Once a fortnight the screen round underneath the table is removed and the accumulated dust cleared out. The sorted papers are thrown into different hoppers, and are shot down to the floor below, where there is a tremendous guillotine cutting-machine, driven by a gas engine. All sorts of secrets and confidential communications are here chopped up so far as to render them unintelligible, and then they are packed up for dispatch to the mills, when purchasers come forward with satisfactory offers. Much of the waste is removed back into gunny bags, which are suspended from hooks in the ceiling, and may be rammed full with a sort of Herculean club which some of the damsels employ for the purpose ; but most of them apparently prefer to get into the bags and dance up to the top as their companions keep feeding in the waste.

ADULTERATION IN MASSACHUSETTS.

STATE LAWS FOR THE SUPPRESSION OF ADULTERATED FOOD AND DRUGS.

1. No persons shall, within this Commonwealth, manufacture for sale, offer for sale, or sell any drug or article of food which is adulterated within the meaning of this act.

2. The term "drug" as used in this act shall include all medicines for internal or external use, antiseptics, disinfectants and cosmetics. The term "food" as used herein shall include confectionery, condiments and all articles used for food or drink by man.

3. An article shall be deemed to be adulterated within the meaning of this act :

(*a.*) In the case of drugs—(1). If, when sold under or by a name recognized in the United States Pharmacopœia, it differs from the standard of strength, quality or purity laid down therein, unless the order calls for an article inferior to such standard, or unless such difference is made known or so appears to the purchaser at the time of such sale. (2.) If, when sold under or by a name not recognized in the United States Pharmacopœia, but which is found in some other pharmacopœia, or other standard work on *materia medica*, it differs materially from the standard of strength, quality or purity laid down in such work. (3.) If its strength or purity falls below the professed standard under which it is sold :

(*b.*) In the case of food—(1.) If any substance or substances have been mixed with it so as to reduce, or lower, or injuriously affect its quality or strength. (2.) If any inferior or cheaper substance or substances have been substituted wholly or in part for it. (3.) If any valuable constituent has been wholly or in part abstracted from it. (4.) If it is an imitation of, or is sold under the name of, another article. (5.) If it consists wholly or in part of a diseased or decomposed, putrid or rotten animal or vegetable substance, whether manufactured or not, or, in the case of milk, if it is the produce of a diseased animal. (6.) If it is colored, coated, polished or powdered, whereby damage is concealed, or if it is made to appear better or of greater value than it really is. (7.) If it contains any added poisonous ingredient, or any ingredient which may render it injurious to the health of a person consuming it.

4. The provisions of this act shall not apply to mixtures or compounds recognized as ordinary articles of food or drinks, provided that the same are not injurious to health, and are distinctly labelled as mixtures or compounds. And no prosecutions shall at any time be maintained under said act concerning any drug the standard of strength or purity whereof has been raised since the issue of the last edition of the United States Pharmacopœia, unless and until such change of standard has been published throughout the Commonwealth.

5. The State Board of Health shall take cognizance of the interests of the public health relating to the sale of drugs and food and the adulteration of the same, and shall make all necessary investigations and inquiries in reference thereto, and for these purposes may appoint inspectors, analysts and chemists, who shall be subject to its supervision and removal.

Within thirty days after the passage of this act the said Board shall adopt such measures as it may deem necessary to facilitate the enforcement hereof and shall prepare rules and regulations with regard to the proper methods of collecting and examining drugs and articles of food. Said Board may expend annually an amount not exceeding ten thousand dollars for the purpose of carrying out the provisions of this act : provided, however, that not less than three-fifths of said amount shall be annually expended for the enforcement of the laws against the adulteration of milk and milk products.

6. Every person offering or exposing for sale, or delivering to a purchaser, any drug or article of food included in the provisions of this act, shall furnish to any analyst or other officer or agent appointed hereunder, who shall apply to him for the purpose and shall tender him the value of the same, a sample sufficient for the purpose of analysis of any such drug or article of food which is in his possession.

7. Whoever hinders, obstructs, or in any way interferes with any inspector, analyst, or any other officer appointed hereunder, in the performance of his duty, and whoever violates any of the provisions of this act, shall be punished by a fine not exceeding fifty dollars for the first offence, and not exceeding one hundred dollars for each subsequent offence.

8. The State Board of Health shall report annually to the Legislature the number of prosecutions made under said chapter, and an itemized account of all money expended in carrying out the provisions thereof.

9. An inspector appointed under the provisions of said chapter two hundred and sixty-three of the acts of the year eighteen hundred and eighty-two shall have the same powers and authority conferred upon a city or town inspector by section two of chapter fifty-seven of the Public Statutes.

10. Nothing contained in chapter two hundred and sixty-three of the acts of the year eighteen hundred and eighty-two shall be in any way construed as repealing or amending anything contained in chapter fifty-seven of the Public Statutes.

11. Before commencing the analysis of any sample the person making the same shall reserve a portion which shall be sealed ; and in case of a complaint against any person the reserved portion of the sample alleged to be adulterated shall upon application be delivered to the defendant or his attorney.

PETROLEUM DISEASE.—A French journal states that the refiners of petroleum—those especially who clean out the apparatus which has been used in the final rectification—are subject to a peculiar skin disease resembling the cancer of chimney sweepers.

SALT OF THE EARTH.—It has been reckoned that if the whole ocean were dried up, all the water passing away as vapor, the amount of salt remaining would be enough to cover 5,000,000 square miles with a layer one mile thick.

LIFE PRESERVER.—An automatic life-saving belt has been tried in the Thames. It can be screwed up like a ball and fired from a cannon or thrown by hand, the belt righting itself by contact with the water.

INDUSTRIAL EDUCATION.

WHAT IS THE BEST SYSTEM FOR BOYS TO LEARN TRADES ?

Considerable of our space for some time past has been given to those who wished to discuss the correlated questions of trade teaching in schools, and that of apprenticeship. We have thought it best to allow considerable latitude in this discussion, for the reason that we thought it desirable to ascertain, so far as possible, the direction in which the thoughts of practical men—the men most interested in these matters—were tending. The thing which, it seems to us, has been most clearly brought out by this discussion is that, so far as mere speculation goes in such a matter, little or nothing can be determined by it. No such industrial university as is proposed by Professor Sweet has ever been tried, and until it is tried the question of its success or failure cannot be determined. It is a matter to which Professor Sweet has devoted a great deal of thought, and no one who is at all acquainted with him will for a moment doubt but that this thought and the article which is the outcome of it were inspired by the very highest and best of motives. It has provoked criticism, which, of course, was expected, and, in fact, desired. Some of the arguments brought against it seem strong, but the question of the success or failure of such a school can only be settled by a trial, and such a trial can be made only when men having money to spare become interested in it, and therefore willing to spend their money for it. To our mind the question is not so much whether the school plan is or is not better than the old system of apprenticeship by indenture, as what can be devised that will enable boys adapted to the machinists' and kindred trades to find opportunities for learning them systematically and thoroughly. At present the situation is simply chaotic. It is extremely difficult, if not impossible, for any one to accurately define the term machinist—define it so that no one can dispute the accuracy of the definition. And in our opinion no plan will ever be devised for acquiring the skill and training necessary to be a real machinist that will be so good as an apprenticeship in a regular commercial machine shop. But that fact signifies little if we have lost the institution of apprenticeship, for if such a loss has occurred then the only question is of a substitute. But it is to be remembered that, no matter what may be said to the contrary, the institution of apprenticeship is not completely gone so far as it applies to the machinist's trade in this country, for there are a number of the very best shops in which apprentices are regularly employed. It is true that the system has greatly declined, but, so far as machinists' apprentices are concerned, this is due solely to changes in the methods of doing work which make apprentices unprofitable to employers, and at the same time makes it difficult if not impossible for boys to get such experience and training as will make them real machinists. But this applies only in such shops as have been able to minutely subdivide and classify the work, keeping each man confined to a certain part of it. Apprentices are out of place here, but, generally speaking, real machinists are equally so. If these two facts were better understood we would be in better shape to arrive at a solution of the question. There are many smaller shops and departments of the larger ones where boys can learn to be good machinists, and if every employer would in such shops or departments employ just as many apprentices as he could do justice to and no more, taking pains to select the best boys, and then treating them well, it would, we think, prove mutually satisfactory. A machine shop is, and always will be, the best place to learn the machinists' trade, but a factory is no place to learn it, even though machines are manufactured in the factory. In the tool room of a modern sewing machine factory, for instance, a boy might learn to be an excellent machinist, while

in the factory itself he could not; but an important fact to be considered along with this is, that real machinists do not work in the factory, save in some exceptional instances, and apprenticeship is not needed to supply workmen for it. This applies to other work in varying degrees, depending upon the extent of the application of the factory methods of manufacture. When the genuine machine shop is provided with boys having an ambition to become genuine machinists, it should be remembered that, while there should be some agreement as to terms, length of service, etc., there is little to be gained by attempting to retain a boy who really wants to leave. Boys should be selected after a preliminary trial to determine if there is a mutual desire to enter into a contract. Thus the right kind of a boy can usually be selected, and things should then be so managed as to make him see that his interest lies in doing his best, and staying his term out. If this and his own sense of honor do not hold him, he is not worth holding. And in this connection it should be remembered that, with an honorable and ambitious boy, the employer's interest lies in the direction of advancing him as fast as possible, and making him a skilled mechanic as much in advance of the expiration of his term as possible. Both parties will thus get the best results from the apprenticeship. Attempts to teach trades in factories, refusal by proprietors to teach them in machine shops, and careless selection of boys to be taught, are more than anything else responsible for the decline of the apprentice system, and it can be revived by avoiding these things. The experience of a number of the best shops in this country proves this. But if apprenticeship is to die out the experiment of a genuine trade school should be tried, and such a trial would be interesting, whether apprenticeship is to die out or not, and it would probably succeed just in proportion as it deserved to succeed.—*American Machinist.*

ASTRONOMICAL PROGRESS.

GRADUAL GROWTH OF A CATALOGUE OF THE STARS.

The improvements made in photographic processes during the last twenty years have made possible discoveries and advances in astronomy so important as to create an epoch in the history of this science. The high sensitiveness of the dry plates invented by the Englishman, Meddox, in 1871—since the new and simplified process of developing the plates was introduced, which gives a clearly defined and undistorted image—permits of the substitution of the photographic method for direct observation with the eye. One advantage is that the personal equation due to subjective errors of the observer is eliminated. A greater advantage is the circumstance that on sufficiently long exposure a very faint object leaves an impression on the plate much more distinct than the sense of sight can appreciate with the most prolonged gaze. The eye can be trained to perceive certain differences in the illumination of neighboring parts, but the limits of its capacity are soon reached; whereas photographs depend on the quantity of light falling on the plate, and by length of exposure the impression can be made as sharp as is desired. And further, the scintillation or twinkling of the stars, caused by the movement of the air, has much less effect on photographs than upon the eye when the object observed is only faintly visible. The scintillation causes a vagueness of outline in the photograph, but the mean position of the star is the darkest point of the picture, which allows of a sufficiently accurate measurement. A huge task accomplished by the aid of photography was the cataloguing of all the stars down to the eleventh magnitude. About 3,000,000 stars have been mapped by means of photographic plates, and it is proposed to extend the work so as to include all above the fourteenth magnitude, of which there are between 30,000,000 and 40,000,000. On the plates innumerable stars are shown in regions of the heavens where not one can be descried with the naked eye. The value of the plates can be seen when it is understood that some of the chief problems in astronomy have relation to the changes in the positions of the stars, and that the maps of zone divisions, that have hitherto furnished the data for calculations, contained only about 200,000 stars. New photographs taken at the end of a hundred years, and compared with those made now, will widen immensely the field of astronomical knowledge. The work has been in progress since 1887, when a congress decided on the plans, and divided the task between twenty-three observatories. The photographic method of determining the forms of the nebulæ is of equal value. The nebulæ we suppose to be worlds in the process of formation. Spectral analysis shows us that to a large extent they are composed of enormous masses of gaseous matter, with which vast regions of the universe are filled. Of their shapes and transformations we know little. Drawings made by different observers vary to such an extent that they can scarcely be identified. One of the finest is the nebula of Andromeda, which has lately been taken by Roberts on a plate exposed for four hours. Whereas the drawings gave no idea of the nature of this formation, we can see at once by the photograph that we have here a body resembling Saturn—bright rings encircling a nucleus of firmer matter. It is a world in the same condition that our solar system, many thousands of years back, was in, according to the theories of Kant and Laplace. With the help of photography we can learn the true shape of the nebulæ, and by comparing pictures taken many years apart, we shall be able to discover whether they undergo changes of form. A third part, of great importance, played by photography, is that of determining, in conjunction with the method of spectral analysis, the rapidity of the movements of stars within the radius of vision—an idea suggested by Prof. Vogel, of Potsdam, who has instruments for taking the measurements for some fifty-five stars. We can now measure the speed of the motion down to a single mile. Since the end of the last century astronomers have studied the movements of stars in relation to the solar system, but only a few stars of which the parallax was known admitted of such a calculation. The direction of the movement could be determined by a great number of observations, but the new method first gave us the rate of velocity. In observing the spectrum of the stars Vogel uses a prism of high dispersive powers. Attempts to obtain lines with the grating, which possesses a much greater resolving power than the prism, have failed, owing to the faintness of the stellar spectra. The spectroscope with grating is found very useful, however, in measuring solar movements, such as the development of protuberances, the velocity of rotation, etc. The rapidity of motion observed in the material constituents of the sun is something enormous. The swiftest storms on the earth's surface travel at the rate of thirty or forty metres a second, whereas on the sun prominences are generated that often rise to the height of 20,000 miles in a quarter of an hour, presenting a velocity of 150 to 300 kilometres a second. Important conclusions have been reached by Wilsing, in Potsdam, in regard to the faculæ, which he has subjected to a close examination. It is known that the surface of the sun, when viewed through the telescope, presents an uneven appearance. Pores, spots, and faculæ are distributed over the sun's surface with tolerable regularity. The sun spots and the faculæ afford the most important evidence regarding the physical nature of the sun and the period of rotation. Late observations have shown the remarkable fact that different parts of the sun's surface have various periods of rotation. Wilsing, by measurements of faculæ on photographs, has found that in all the regions where the faculæ are found the velocity is the same, and calculates the time required for a complete rotation at 25 days 5 hours and 47 seconds. Concerning the nature of the faculæ he draws the conclusion that they have their origin in the lower depths of the solar atmosphere, and indicate the seat of the forces that give rise to the metallic prominences and the sun spots that form later.

LIFE AND ITS CONDITIONS.

WHAT IS IMPLIED BY HARMONY WITH THE ENVIRONMENT.

The above phrase, which is the corner-stone of the modern evolutionary philosophy, is at the same time a mere truism, as applied to living organisms. Life and the conditions of life must necessarily be co-existent, and the question of the variation of existing forms of life to meet the conditions of a changed environment, or to put themselves more in harmony with the environment already existing, is the one of the most importance in any discussions of theories of evolution. To many evolutionists the shape and action of every limb and organ, the color of every feather, the form of every leaf, all indicate the attempt of the animal or plant possessing it to put itself more in harmony with its environment, or, in other words, the minutest detail of bodily structure is of definite use to the organism in performing the two great functions of its existence, nutrition and reproduction. Without discussing any of these minor points, interesting and important as they are, it may be interesting to consider certain widespread and universal examples of the adaptation of living forms to surrounding conditions, which are often overlooked from their very universality. All terrestrial animals and plants are constantly surrounded by a gaseous form of matter, composed of a mixture of nitrogen and oxygen. We have no reason to believe that its composition has been materially different since the time when we note the first indications of life on our globe. It is exactly adapted to sustain the vital processes of the organisms living in it. An atmosphere of pure oxygen or pure nitrogen would cause the death of any animal immersed in it, but the proportions in which they are mixed are exactly right, and the small amount of carbonic acid present is exactly what is needed for the wants of growing vegetation. Nearly every other gas known is either corrosive, irrespirable or poisonous, but the air is practically a neutral, harmless body with its active oxygen so diluted by the inert nitrogen, that the oxidizing processes in the bodies of animals take place with just the proper rapidity to enable them to pass through their life cycle under the most favorable circumstances for themselves and their descendants. It is evident that this adaption of the air to the needs of the animal organism must necessarily exist, otherwise all animal life would have perished at the moment of its coming into existence, but every teaching of science shows that the air was in existence before animals, and as it could not have changed its composition to meet the needs of an organized being, however introduced, it is certain that the form and nature of these beings, if modified at all, must have been modified in a way to meet the conditions demanded by the air. The lowest forms of life can better withstand change in the composition of the air, and to account for the harmony between animals and plants and the atmosphere in which they live the inference is almost irresistible that in the gradual development and modification of inferior forms, each succeeding generation, however it might change in other ways, always retained those organs and functions which were best fitted to utilize the previously existing properties of that mixture of oxygen and nitrogen gases surrounding them. Assuming the existence of life in the first place—and its origin and nature is a mystery about which we know nothing, and which we fear can never be penetrated—we cannot but believe that if the atmosphere had been composed of chlorine, or even if the present gases instead of being mechanically mixed had been chemically combined into nitrous acid, that organisms would have been developed

capable of existing in these corrosive gases, and that to the man living under such conditions the chlorine or nitrous acid would seem as bland and harmless as the pure air of ocean or mountain does to us. Next to air, water is the substance which is of the most importance to living organisms. It is a necessity of life, and forms the greater portion of the substance of all animals and plants, but how perfectly adapted it is to its purpose. Although dissolving to a greater or less extent most chemical compounds, its action on animal or vegetable tissues is practically nothing; it is a bland, neutral and chemically inactive liquid, with physical properties which fit it most admirably to enter into the structure and sustain the vital processes of animals and plants, which no other liquid known to us is capable of doing. Who can doubt that the countless generations of living beings on our globe have been so modified and adapted in substance, form and function as to be in perfect harmony, chemically and physically, with this omnipresent liquid with which they are necessarily brought into such intimate connection. Animals and plants were made to suit the water, not the water to suit the plants. A remarkable instance of this is found in the distinction between salt and fresh water animals and plants, each of which lives and flourishes under conditions which would be fatal to the other. Coming to the mineral constituents of the earth, some very striking examples may be found. The salts of calcium are everywhere present, and are entirely harmless, while the elements barium and strontium are extremely rare, and, at the same time, poisonous. Nitrogen gas is present in the air, and the phosphates of lime and magnesia are widely distributed. All of these substances are not only harmless, but necessary to the animal economy, while the closely allied arsenic, antimony and bismuth are unwholesome and poisonous, but are only found in a few scattered localities. Chlorine, in the form of common salt, is met with everywhere, but the salts of its rare chemical brethren, fluorine, iodine and bromine, are, except in medicinal doses, highly injurious to health. If we accept the modern theory of the evolution of the elements from one primitive form of matter, we can see no reason why the water of the ocean might not have contained as much iodide of potassium or lithium as it does of chloride of sodium; that the coral islands, marble quarries and limestone strata might not have been formed of the poisonous carbonate of barium, or even that the atmospheric nitrogen or the phosphates of the soil might not have been replaced by compounds of arsenic or antimony. Under such conditions, life as we know it could not exist; but there seems to be no reason why organisms might not have appeared that could tolerate arsenic, antimony, barium or iodine, as well as they do the present common elements so closely allied to them. While the above considerations are suggested by the theories of development and harmony with the environment, it must be confessed that they are largely of a speculative nature. We can study existing forms of life, their structure, composition, actions and functions, but we do not know the nature, origin or destiny of that life. We are studying a chain, both ends of which stretch into infinity, and whether we can ever attain and comprehend these limits either here or hereafter time only can show. We can only strive after "more light," trusting to the future to make those things clear to us which are now veiled in an obscurity which appears to be beyond the power of the human intellect to penetrate.—*Popular Science News.*

SUPERSTITION.

AN UNREASONING TRAIT OF REASONING CREATURES.

Superstition like prejudice is impervious to logic, and no argument addressed to the reason has any effect upon its power or prevalence. Why is thirteen an unlucky number? What possible connection has the assemblage of thirteen persons at dinner with the death of any one of them during the ensuing year. If fourteen dined together there is certainly a greater chance that one of them would pass away within the twelvemonth than if one less sat at the table, and yet this is not the common estimate. There is not a housekeeper in this city who would seat thirteen at her table without a feeling of regret, and the great majority would not entertain a company composed of that number for any consideration whatever. We recall an instance where a family given to a liberal hospitality had a dining table which seated six on either side and one at each end. Once every week a dinner was given to which twelve guests were invited, the host and hostess occupying the other seats. If one of the persons invited sent a regret a substitute was sought for and secured if possible. But failing in this, a young woman, a poor relative with pleasant manners, living in the family, took the vacant chair, and was supported in the house for no other purpose than to meet this possible need. There have been "Thirteen Clubs" organized to relieve the number of its reputation, but they have utterly failed of their object. We cannot find that those who thus braved the common superstition were cut short in their days on this account. But people cannot insure themselves against the fatal blow, even by a display of unusual courage, and the ranks of the thirteen were broken sooner or later by the assault which none can successfully resist. There are scores of superstitions connected with the moon and its phases. The effect of the "changes" on the weather is a matter of almost universal belief, although the most renowned of our scientists have agreed with Dr. Ick and the celebrated Dr. Lardner that "there is not the slightest observable dependence between them." There is probably not a person in the country who would not, if he had his choice, prefer to catch the first glimpse of the new satellite over his right shoulder, while large numbers are rendered quite miserable if they happen to see the narrow crescent on its first appearance over their sinister side. The prevalent impression that Friday is an unlucky day regulates in many respects the business of the world. Those who are ready to assert that they have no feeling whatever on the subject are very careful in solicitation of patronage for any new enterprise, or in choosing the date of an entertainment or a marriage not to run counter to this popular fallacy. Some years ago an English shipowner, finding that none of his vessels could get off to sea on Friday owing to the feeling among the sailors, determined to cure the madness if he could. He therefore laid the keel of a vessel on Friday, made every contract concerning the construction on Friday, and launched the craft on the unlucky day. He christened the ship with this name, and found an old sea captain called Friday whom he made master for her first voyage. She was loaded for an East India port, and after great difficulty in securing a crew she sailed on a given Friday for her destination. She was never spoken or heard from after the pilot left her. The presumption is that when she encountered her first storm, the sailors, who are proverbially superstitious, became apprehensive and took to the boats, leaving the ill-fated craft to founder in mid-ocean and to perish themselves in like manner. It is singular how one such incident will deepen a prejudice already existing and established in the minds of many, who are otherwise sensible, a connection between two events that can have no possible relation to each other. Two years ago, it is said, a woman afflicted with catarrh visited the Manhattan Eye and Ear Hospital, to be treated for her illness. Dr. Johnson, who at that time had charge of Cabinet D, treated the case, and two days afterward he suddenly died. The patient was relieved by the treatment, but six months from the first date, on a return of the malady, she again sought the institution. Dr. Pond, then in charge, attended her, and in two days after he died of heart failure, as the record states. A week or so ago she again applied for treatment, and Dr. David Phillips prescribed for her. He dined the same day with a friend, went home not feeling very well, and was found dead in his bed the next day. Whereupon the story is published far and wide, and the poor woman is set down as "The Fatal Patient," whom it is dangerous for any physician to treat. And yet no person of ordinary intelligence would see anything very remarkable in the coincidence described. The original "weather prophet" (Mr. E. Merriam) used to print his "cycles" and "heated terms" and "perturbations the sure sign of earthquakes" in this journal during the administration of Gerard Hallock, nearly fifty years ago, and the present editor in chief, too young then to be very patient with people of such vast pretensions, was disposed to make fun of the predictions. One day, to establish the truth of his prognostications, the "Brooklyn Sage," as he was often called, produced a book in which he had recorded as in a diary his presages of the weather, including predictions of storms, earthquakes and special atmospheric disturbances. Mr. Hallock had kept in a drawer the clippings descriptive of all such phenomena, and he was challenged to produce them, and see if they had not been foretold and the account anticipated in this daily record. There were no telegraphs and ocean cables to give instant notice of such occurrences, and if the writer in Brooklyn put down under date of March 4th, "perturbation—probable earthquake in South America," or signs of a hurricane in the China seas," and the slow mail a month or two later brought an account of such upheavals or disaster, the skill of the observer was firmly established. Sure enough, the volume stood the test in a most remarkable manner. Out of twenty-three actual "shakes" in some part of the world, twenty were predicted in the book at the corresponding date. Out of seventeen fierce storms, notable for the damage they had caused on land or sea, fifteen had been predicted. The old man closed his book with an air of triumph, and the veteran editor uttered his mild rebuke of our incredulity. We remembered the saying of an old scientist who ridiculed the faith in dreams, and was asked if none of his ever came true. He answered that in a long life he had waked with the remembrance of over 30,000 dreams. Of these only five came true, and the connection therefore failed for want of evidence. It occurred to us to test the book on its other side, and see how many predictions had been made that had no counterpart in history. So we seized the volume, and fortifying ourselves behind a desk, we turned its pages. Our suspicions were fully verified. There was hardly a day in the whole year in which some atmospheric disturbance was not plainly predicted, so that a disaster could hardly come amiss to the plethoric volume. If twenty of the twenty-three actual earthquakes found a heralding in the book, there were at least 300 heraldings that had no actual following. If fifteen of the seventeen storms were of previous record, there were ten times that number bespoken in the book that put in no appearance. The credit of the prophet went down to zero under that exposure. It is the exceptional coincidences that give birth to the prevalent superstitions and keep them alive in the popular faith.

LIGHTNING'S FORCE.—It has been calculated that the electromotive force of a bolt of lightning is about 3,500,000 volts, the current about 14,000,000 amperes, and the time about 1 20,000 part of a second. In such a bolt there is an energy of 3,284,182 horse-power.

EASY SOLUTION.—The *Northwestern Mechanic* is responsible for the following: A man who wanted to learn what profession he would have his son enter put him in a room with a Bible, an apple and a dollar bill. If he found him, when he returned, reading the Bible, he would make a clergyman out of him; if eating the apple, a farmer; and if interested in the dollar bill, a banker. When he did return, he found the boy sitting on the Bible, with the dollar bill in his pocket, and the apple almost devoured. He made a politician out of him.

NERVES AND NARCOTICS.

A CAUTION AGAINST RESORTING TO STIMULANTS AND SOPORIFICS.

In the May number of the Breslau *Deutsche Revue* Dr. Adolph Seeligmuller discusses the universal subject of nerve troubles as follows: Excessive, exhausting and too long-continued work, insufficient or irrational recreation, and deprivation of the right amount of sleep are some of the main causes for the increase of nerve troubles in our day. The competition in all the professions and callings is so great that for every person whose powers fail, ten are ready with fresh strength to perform the same or greater labor for the same or even a smaller remuneration. All exciting and weakening amusements should be done away with, and the quiet joys of family intercourse, the conversation of intimate friends, and sociable walks in the fields and woods should take the place of brilliant evening assemblies. Then every person should pursue some agreeable occupation beside his regular profession, and in the latter he ought to have frequent hours of relaxation to relieve the strain. Mental application, even for healthy adult persons, ought not to be continued for more than three or four hours at a time, and night work it would be best to avoid altogether, as the excitement is apt to interfere with sleep. All who follow intellectual pursuits ought to have several weeks of complete rest at least once a year. Sleep is, however, the principal agent of recuperation. The amount of sleep needed is different for different persons. For the ordinary worker from six to eight hours is absolutely necessary; yet how often, in the battle for existence in our time, is the desire for sleep forcibly suppressed and the night's rest improperly shortened. Sooner or later insomnia wreaks its vengeance on the offender. Many a person who once robbed himself of the necessary amount of sleep would gladly sleep now, but cannot. I do not hesitate to say that nerve troubles first develop into disease when joined with sleeplessness. It appears as a later symptom of a long-standing nervous disturbance, but to the lay mind it appears as the first signs of disorder, and is frequently taken to be the cause. The worker of the nineteenth century works beyond his strength, and in order to keep it up he resorts to stimulants—coffee, tea, spices, alcohol, tobacco. These produce a superexcitation of the nerves, which brings in its train insomnia; and to overcome this he resorts to narcotics. The life of many of our contemporaries consists in taking artificial stimulants to enable them to perform their work, and then resorting to powerful narcotics that can counteract the artificial stimulation and produce rest and sleep. Any one can see that this alternation of stimulation and depression at least once every twenty-four hours must weaken the nervous system. Coffee is a powerful stimulant for the heart, nnd, therefore, those who suffer from palpitation, from hysterical conditions, or from insomnia should avoid its use. Tea in day time acts more mildly on most people, but taken evenings it drives away sleep. The spices are less active nerve stimulants; yet pepper, especially, and some of the others affect the nerves of the digestive organs powerfully, and their liberal use in modern cookery has something to do with the epidemic insomnia. Of the injurious, the actually destructive effects of alcohol taken in excess little need be said. We physicians are not a little to blame in that we insist on giving large quantities of alcohol in fevers and conditions of exhaustion, not to speak of the methods used to cure the morphine habit, until patients often acquire the drinking habit. The evil results of the abuse of alcohol are not often apparent. Long before *delirium tremens* or other serious brain diseases appear, they are preceded by manifold nervous disturbances, the real cause of which is not often understood. I have frequently found that rheumatic pains that were ascribed to a cold were nothing but alcohol neutritis, a mild form of inflammation of the nerves resulting from the use of alcohol, which disappeared when the practice was given up, only to return with the slightest repetition of the indulgence. Most habitual drinkers, and some of them very early, are subject to changes in the vascular organs, such as fatty degeneration of the heart and arterio-sclerosis, which lead to grave affections of the nervous system, like apoplexy and softening of the brain. Finally, it may be taken as proven that the children of drunkards, if they are not carried off prematurely by brain troubles, are frequently afflicted with serious nervous ailments, such as epilepsy, idiocy and the like. Tobacco has come to be in our time a national poison in many countries, and most especially in Germany. As sequels of chronic nicotine intoxication may be noted without fear of contradiction: Palpitation and weakness of the heart; irregularity of the pulse, of which heart-pang or *angina pectoris* is an acute symptom; general nervous debility; tremulousness; disturbances of vision even to the point of blindness; and hypochondriacal depression even to the degree of melancholia. The fear-inspiring intermission of the pulse is a frequent cause of inveterate insomnia. That the children of heavy smokers suffer with uncommon frequency from nervous diseases is an established fact. And now for the narcotics, at the head of which stands morphine. The great danger of falling into the habitual use of this drug arises from the cowardice and degeneracy of our times. No one will suffer pain, no matter how slight or transitory. Not a tooth can be drawn, not a child born into the world without the use of an anodyne, and when death comes we must have enthanasia. It is said that many physicians lend their hand too willingly and are ready with the injecting needle to check a pain that could easily be borne, not reflecting that it is immoral to encourage effeminacy and a dangerous thing to plant the germ of the morphine habit, a terrible passion that leads inevitably to physical and spiritual debility and to death. The same is true of the constantly increasing cocainism and hasheesh intoxication. Our generation demands above everything narcotics to produce the sleep that first we drive from us, and afterward so fondly desire: opium, morphine, chloral, bromide of sodium, paraldehyde, hydrate of amyl, urethan, sulfonal, hypnon, somnal, and whatever are all their names—one would think names would soon give out, so fast are these children born. But how can we sleep without resorting to soporifics? Just as the life of the soul during the day is reflected in dreams, so the conditions of sleep are determined by all that we do when awake. The chief rule is to so act waking that you can sleep. Begin by accustoming yourself to do without excitants. Many a case of sleeplessness I have seen yield, when all other means failed, to restricting or totally abandoning for a time the use of spirituous drinks, coffee, tea and tobacco.

WORKS BOTH WAYS.—A Broadway druggist has a large, inviting silver-plated machine for registering weight. People come in to make purchases, and while the clerks are filling their orders they step on the scales. To the right of the scales is a small table covered with pamphlets entitled "How to Get Thin." On the other side is a similar table on which there are a lot of books labeled "How to Increase One's Weight." No man ever gets off the scales without deciding that he is either too fat or too lean, and naturally selects a book which recommends a pill, and the pills cost $2 a box. If the visitor be too fat he buys a box having a blue label, and if he is too thin he takes a box of a reddish tint.

HIGHEST PLACE.—The highest place in the world regularly inhabited is the Buddhist monastery, Halne, in Tibet, Asia, which is about 16,000 feet above sea level. The next highest is Galera, a railway station in Peru, South America, which is located at a height of 15,635. Near it, at the same level, a railway tunnel 3,847 feet long is being driven through the mountains. The elevation of the city of Potosi, in Bolivia, South America, is 13,330 feet; Cuzco, Peru, 11,380 feet; La Paz, Bolivia, 10,883 feet; and Leadville, Col., 10,200 feet.

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.
July.

MEAT.—Beef, lamb, mutton, ham, kidneys, liver, sausage, veal.

GAME AND POULTRY.—Pigeon, chicken, duck.

FISH.—Anchovy, bass, bluefish, blackfish, cod, eels, clams, flounder, haddock, halibut, herring, lobsters, mackerel, mussels, perch, porgie, prawn, salmon, shad, turtle, trout, sturgeon, whiting, weak-fish.

VEGETABLES. — Beans, cucumbers, carrots, cauliflower, egg-plant, lettuce, onions, parsley, parsnips, potatoes, shallots, spinach, turnips, radish, rhubarb, corn, beets.

FRUITS.—Cherries, strawberries, raspberries, huckleberries, melons, gooseberries, blaekberries, peaches, pears, tamarinds bananas, pineapples.

PRACTICAL RECIPES.

FRENCH TOAST.—To a cup of milk add a well-beaten egg and a little salt. Cut some slices of bread rather thick, trim off the crust, make the slices the same size, dip them into the milk and fry to a light brown in boiling lard.

BARLEY BROTH.—Put a pound of mutton or beef to cook with half a pound barley and four quarts of water, boil for an hour, then add a piece of cabbage, a turnip, a carrot, a piece of parsnip, an onion cut in two, some parsley and a few stalks of celery. Boil for an hour and a half, strain, season, and serve. Add more water if too much boils away.

POTATO PUFF.—Two cups cold mashed potatoes, two spoonfuls melted butter, two well-beaten eggs, a cup of milk, pepper and salt. Beat the ingredients together until they are light, then pour into a buttered baking dish, smooth over with beaten egg and bake a light brown.

GEMS.—Three well-beaten eggs, two cups milk, two cups flour, half a saltspoon of salt. Beat up lightly and bake in gem pans in a quick oven. Serve with cream sauce made as follows: Beat to a cream a cup fine sugar and half a cup butter, add four tablespoonfuls of thick cream, beat very light, flavor with nutmeg and vanilla or brandy.

GOLDEN LAYER CAKE.—One cup sugar, one half cup butter, one half cup sweet milk, two and a half small cupfuls of flour, two teaspoonfuls of baking powder, a little salt, whites of three eggs; flavor with lemon and bake in layers. Beat up the yolks of the eggs, thicken them with powdered sugar, flavor with grated lemon rind, and spread between and on top of the layers.

SAUSAGE RISSOLES.—Have some water boiling in a saucepan. Take a few sausages and plunge them into the water; after they have boiled for a few minutes, take them out, strip off the skins and cut them in two and set them aside to cool. Make some light pie crust, cut it into thin squares of four or five inches, lay half a sausage in each, fold over the edges, brush each rissole with beaten egg and bake a fine brown.

SAUCE FOR CODFISH.—Put in a saucepan a bunch of parsley, a young onion cut in pieces, two cloves and a good lump of butter, cook them together for a few moments, then add a heaping teaspoonful of flour and cook for a moment more; add sufficient cream or milk to make it the proper consistency. Strain, add a little chopped parsley that has first been scalded, and serve.

BOSTON BROWN BREAD WITH CHEESE.—Cut some thin slices of bread and toast them slightly. Butter each slice and cut it into quarters, lay them on a buttered tin and pour a little milk on them; sprinkle with

salt and pepper and cover with Parmesan cheese; brown in the oven for ten minutes. This is a nice breakfast dish.

COCOANUT PUDDING.—To one fresh cocoanut, grated fine, add half a cup of sugar, half a saltspoon of nutmeg and a saltspoonful of salt. Beat thoroughly the yolks of five eggs; add to them four tablespoonfuls of creamed butter; whisk all the ingredients until they are a creamy mass. Pour it into a buttered pudding dish and bake thirty minutes.

STRAWBERRY ICE CREAM.—Hull two quarts of ripe berries and cover them with half a pound of sugar and let them stand for two hours, mash them through a sieve and add more sugar, enough to make a thick syrup then add to it, beating hard all the time, two quarts of cream. Freeze and pack.

HEAT AND ELECTRICITY.—The electricity conducting capacity of various metals ranks as follows: Silver 100; copper 96; gold 72; aluminum 52; zinc 26; platinum 16; iron 15; nickel 12; tin 11; lead 7. Copper and iron are the only metals that have commercial value as electrical conductors. The heat-conducting qualities of the metals range about as follows: Silver 100; copper 73.80; gold 52.20; annealed aluminum 38.87; unannealed aluminum 37.96; tin 14.50; iron 11.90; steel 11.60; lead 8.50; platinum 8.40; bismuth 1.80.

RELIC OF THE PAST.—In Dubuque, Ia., on June 9, Henry Wagner was digging in his garden when he turned up the dirt and rust incrusted blade of an ancient sword. When the crust had been removed a beautifully engraved scroll enclosing the date "1580" was revealed. Above it is the figure of a crouching hound, and still higher a mailed arm and hand clinching a drawn sword. On the other side is engraved what looks like a Papal mitre and a stand of armor with crossed swords and lances. The whole blade is covered with handsome engravings and is of the finest Damascus steel. Although apparently over 300 years old it can still be bent almost double. The weapon is thought to be a relic of the early French explorers who first visited the Valley of the Mississippi.

Exhaustion

Horsford's Acid Phosphate.

The phosphates of the system are consumed with every effort, and exhaustion usually indicates a lack of supply. The Acid Phosphate supplies the phosphates, thereby relieving exhaustion, and increasing the capacity for labor. Pleasant to the taste.

Dr. A. N. KROUT, Van Wert, O., says:

"Decidedly beneficial in nervous exhaustion."

Dr. S. T. NEWMAN, St. Louis, Mo., says:

"A remedy of great service in many forms of exhaustion."

DESCRIPTIVE PAMPHLET FREE.

RUMFORD CHEMICAL WORKS,
PROVIDENCE, R. I.

BEWARE OF SUBSTITUTES AND IMITATIONS.

CAUTION:—Be sure the word "Horsford's" is *printed* on the label. All others are spurious. Never sold in bulk.

BUSINESS NOTES.

CUT THEM OUT.

Original receipts by Maria Parloa, Mrs. Rorer, Amy Barnes, Mrs. Lincoln, Miss Bedford, Marion Harland, Mrs. Dearborn and other adepts in the culinary art will appear in our columns, the first one to-day, page 319. These receipts were contributed to the Cleveland Baking Powder Company and that company is going to use part of its advertising space for their insertion. Housekeepers should not miss one of these practical receipts. Cut them out. They are worthy of a place in your own cook book.

HORSFORD'S ACID PHOSPHATE.

If you are nervous, and cannot sleep, try it. Dr. Chas. H. S. Davis, Meriden, Conn., says: "I have used it as an accessory in cases of melancholia and nervous debility, and as a pleasant and cooling drink in fevers, and have been very much pleased with it." Dr. A. L. Zurker, Melrose, Minn., says: "It produced a gratifying and remarkable regenerating effect in a case of sunstroke."

SAVE THE EYES.—In families where there is much sewing to be done, it is a good plan to have the bulk of work on dark and colored goods done by day-light, preserving the white sewing for the evening, in order to save the eyes.

HYGIENIC EXHIBITION.—An International Hygienic Exhibition will be held in the months of January and February, 1892, in Leipzic. The exhibition will comprise, among others, sections devoted to hygiene, food-stuffs, and ambulances.

NIAGARA'S POWER.—According to a scientist, the hourly rate of water falling over Niagara Falls is 100,000,000 tons, representing 16,000,000 horse power; and the total daily production of coal in the world would just about suffice to pump the water back again.

HIGH SCIENTISTS.—"In reference to technicalities," says Dr. James Truman, "there is a certain class of scientific men who, in their dealings with their special work, so overload the matter with technical terms that they can never be clearly understood, even by those equally advanced as themselves."

LONDON GROCERS.—Among the clever stories retailed at the Beefsteak or the Garrick, is a nice one of the florid lawyer, who was "counsel in an action for libel brought by a provision merchant against a local newspaper. He said in his address to the jury: 'My client, gentlemen, is a grocer; and the reputation of a grocer in the City of London is like the bloom on a peach. Touch it, and it is gone forever.'"

GRANT'S HUMOR.—Grant and Sherman were discussing the plans of a campaign, when a third general, a brigadier, entered the tent—a good soldier, but notorious for his carelessness as to his personal appearance. The brigadier finished his errand and went out. General Grant pulled upon his cigar for a few minutes in silence, and then said: "Sherman, I wonder whom that man gets to wear his shirts the first week."

DANGERS OF SULPHONAL.—Although sulphonal is probably one of the safest, as it is one of the most efficacious, among the hypnotics recently introduced, the series of cases published by Bresslauer, of Vienna, show clearly that it has certain dangers. The degree of peril is difficult to estimate, as the patients were lunatics, and were also apparently feeble; but the fact is significant that out of seventy-seven patients who were treated with the drug, no less than seven showed serious symptoms, and in five of these there was a fatal termination. It ought to be mentioned that the patients had been taking the drug for a considerable time in good doses, and had borne it well until symptoms of disturbance set in, these being great constipation, bark brown urine, slow or in some cases rapid but feeble pulse, discolored patches resembling purpura on the limbs, and great prostration. In the cases which ended fatally, the case of death was heart failure, with œdema of the lungs.—*Lancet.*

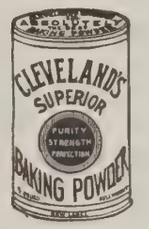
ORIGINAL. No. 22.

Cracknels

BY MRS. S. T. RORER,
Principal Philadelphia Cooking School.

Add to one quart of sifted flour a half teaspoonful of grated nutmeg, one teaspoonful of cinnamon, one of Cleveland's baking powder, a half of salt; mix and rub in four ounces of butter. Add sufficient milk to make a dough. Knead and roll out, spread lightly with soft butter, fold in three, roll out again, and cut with a sharp knife into square cakes. Beat the white of one egg, a tablespoonful of sugar and one of milk together, brush over the tops and bake fifteen minutes in a moderately quick oven.

Use only Cleveland's baking powder, the proportions are made for that.



Cleveland's Baking Powder leavens best because its strength is produced by cream of tartar and soda only, not by ammonia or alum.

25 CTS PISO'S CURE FOR 25 CTS
CURES WHERE ALL ELSE FAILS.
Best Cough Syrup. Tastes good. Use in time. Sold by druggists.
CONSUMPTION

Fine Table Wines

From our Celebrated Orleans Vineyard.

Groud Landsthy & Co.

Producers of the
ECLIPSE
CHAMPAGNE,
530 Washington St.
SAN FRANCISCO.

GENERAL AGENCIES:
NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOSEPH R. PEEBLES' SONS CO., 73 West Fourth Street.
DETROIT: G. & R. McMILLAN & CO., 121 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.

PURE PEPSIN

In Powder and Scale.

MANUFACTURED BY

ARMOUR & COMPANY, Chicago.

Guaranteed free from adulteration or make-weights; of excellent physical properties and high digestive power.

Under similar conditions, **ARMOUR'S PEPSIN** will exhibit greater activity than any other pepsin now before the profession.

The Manufacturers will be pleased to supply members of the Medical Profession with samples of their Pepsin, and with full details regarding digestive strength, if desired.

SEE PAGE 320 FOR VALUABLE OFFER.

WATCHES.

EVERY one wants a watch, and naturally a good watch that keeps accurate time, presents a handsome appearance, and is inexpensive. If such a watch can be found of American manufacture, it is an additional appeal to our patriotism. Just such a watch as this ideal THE ANALYST PUBLISHING COMPANY is enabled to offer as a Premium to its readers. Having some large advertising contracts we have been enabled to procure the movements of the manufacture of the best known American watch factories, namely, the Waltham, Elgin, Hampden and Illinois Watch Companies. These movements are adapted for both ladies' and gentlemen's watches, and are warranted by the makers. These movements have seven jewels, patent lever movement, chronometer balance, patent safety pinion, sunk hard-enameled dial, straight line visible palette, stem winders, hand set; in fact, contain all the latest improvements and can be readily cleaned or repaired by any ordinary good watchmaker. They can be regulated to run as close as any movement.



It is needless to say that to case these movements in solid gold cases would make them too expensive, yet they are cased in what are known as gold filled or stiffened "Ladd" cases, and are warranted to be 14 karat gold, made from two sheets of 14 karat gold overlaying fine composition metal, with regular jointed caps, covers and bezels, and to wear at least five years. They are not plated, nor rolled gold, but actual 14 karat gold cases, thin of course, but stiffened and strengthened by being filled with this fine composition metal. They are finished in the same manner, engine turned and engraved as solid gold watches, and wear and look just the same. No one but an expert can tell them from a solid gold watch. These watches are made both open face and hunting case style, in gentlemen's or ladies' sizes. For gentlemen we recommend plain engine-turned cases; for ladies, a handsomely engraved case.

How to Obtain One of these Watches.

These watches are not to be purchased from us at any price. Send us a club of 25 subscribers to the AMERICAN ANALYST, and $25, the regular subscription price, and one of these watches (your choice of style and size) will be immediately forwarded, post-paid and registered, to your address. You need not wait until you have your 25 subscribers all together, but forward them as you get them and they will be credited to you, and when the number is complete the watch will be sent. A subscription for two or three years will be counted as two or three subscribers.

As these watches are retailed by jewelers at not less than $25, it will be seen that we are offering a real premium with the sole object of increasing our circulation, and that by taking advantage of our offer any one can obtain a good, reliable and handsome watch without cost. As the number of these watches at this price is limited, it is advisable to take steps at once to procure a bargain.

THE ANALYST PUBLISHING CO., 19 PARK PLACE, NEW YORK.

BICYCLES

GIVEN AWAY TO BOYS AND GIRLS!

AN OPPORTUNITY OPEN TO ALL.

The Analyst Publishing Company being desirous of largely increasing their subscription list, will furnish every one with a beautiful Safety Bicycle, ABSOLUTELY FREE, in return for a few hours' canvassing.

To every boy and girl who secures 75 subscribers for the American Analyst at $75, we will give a splendid

$40.00

NONPAREIL

SAFETY BICYCLE.



These bicycles are adapted in size to boys, but are strong enough to carry a man. A boy's bicycle should be a strong one. They are manufactured by the OVERMAN WHEEL CO., the makers of the celebrated VICTOR Bicycle, and have the full guarantee of the makers.

The following is a brief description of the NONPAREIL SAFETY; 26-inch wheels; ball bearing all around, including pedals; solid crescent rims; double tangent spokes; three-fourths inch tires; cranks, three throw, $4\frac{1}{4}$ to $5\frac{3}{4}$ inches; guards to both wheels; tool-bag, oiler and wrench. Finished in bright enamel, all exposed metal heavy nickel-plate on copper.

In selecting these machines as a premium, we have disregarded cheapness and selected a Bicycle which is serviceable, and the makers of which have an established reputation for building the best Bicycle that money, machinery and brains can produce. We are actually furnishing the Bicycles and Papers at less than cost, but hope by stimulating active and successful canvassing, and thus enlarging our subscription lists, to make an eventual profit. We positively guarantee these bicycles to be just as here represented. They will be shipped by express f. o. b. in New York.

Subscription orders must be made out plainly and legibly, and sent as fast as secured, addressed to

THE ANALYST PUBLISHING CO., 19 Park Place, New York.

A VALUABLE BOOK FOR NOTHING.

The AMERICAN ANALYST will send to any person who will forward a New Subscription with One Dollar, a copy of

THE FAMILY CYCLOPÆDIA OF USEFUL KNOWLEDGE.

This is unquestionably one of the most interesting, entertaining and instructive books ever published. It is a universal educator for every member of the family circle, filled with useful information from beginning to end, and this information is given in such an attractive and pleasing way that the book is quite as entertaining as it is instructive. It treats of hundreds of subjects of which no man, woman or child who seeks to be well informed can afford to be ignorant, yet of which the masses of people are entirely unlearned. It contains the cream or substance of a dozen ordinary volumes, and is one of the most valuable and useful books a family can have in the house. No living man is so well informed that he may not learn from it. It is a book for the masses, for old and young, rich and poor, and will be read with pleasure and profit by all. It will likewise be found of great value as a work of reference. The book is profusely and elegantly illustrated, and is conveniently divided into departments, as follows: ***Biography, History, Natural History, Travels, Manners and Customs, etc.; The World Illustrated, Useful Arts and Manufactures, Trees, Plants, Fruits, etc.; Great Inventions, Mining, Wonders of the Sea, Familiar Science, Law for the Masses, Statistical and Miscellaneous.*** All the above subjects are fully and ably treated in this valuable book. It is a vast storehouse of useful and entertaining knowledge—unquestionably one of the best and most valuable books ever published in any land or language. No cyclopædia ever heretofore published at twice the cost is to be compared with this book in point of artistic make-up, beauty, and excellence of illustration, and quality of contents. As a holiday or birthday present for any one, nothing more appropriate or acceptable could possibly be selected. THE FAMILY CYCLOPÆDIA OF USEFUL KNOWLEDGE is a large and handsome book of 544 pages, 12mo, printed upon fine paper and elegantly bound in cloth, embellished with artistic designs in black and gold. It contains ***Two Hundred and Seventy-three Beautiful Illustrations,*** the original cost of which was over $5,000. The book will be sent by mail, post-paid, to any person sending a ***New Subscription with One Dollar.*** It is as large and handsomely gotten up as books usually sold at $1.50 and $2.00, and in the quality of its contents is worth a dozen ordinary volumes.

ADDRESS ANALYST PUBLISHING CO.,

——19 PARK PLACE, NEW YORK.——



HAMMOND'S

CELEBRATED

Calumet Oleomargarine

Strictly pure, cheap and healthful.

Ask your grocer for it.

Put up in packages of all sizes, also prints and rolls.

C. H. HAMMOND CO.,

607 to 615 THE ROOKERY,

CHICAGO.

Also offices at Boston, South Omaha, Neb., and Hammond, Ind.



WOMANKIND.

Published Weekly, Only $1.00 per Year.

There is only one woman's general newspaper, viz.: WOMANKIND. This is a consolidation of Woman and Home, a monthly magazine of high grade, published heretofore at Philadelphia and New York, and the Woman's News. It is published weekly, in attractive form and is the best publication of its kind. It should be in every home. Its many interesting features are enjoyed alike by old and young. Every member of the household can read it with interest and profit.

SPECIAL OFFERS FOR INTRODUCTION.

We offer to strictly new subscribers, WOMANKIND for six months and a copy of **Black Beauty,** free by mail, for only **50** cents; or, a 6 month's subscription and a **Dollar Cook Book,** free by mail for **75** cents; or, a 6 month's subscription and the **$1.00 Peerless Atlas of the World** for **$1.00.** 3 months on trial for **20** cents. Send for sample copy.

THE HOSTERMAN PUBLISHING COMPANY,

SPRINGFIELD, OHIO.

We shall be glad to supply our readers with any periodical published at club rates.

Send us a postal naming periodical and we will quote you prices.

ANALYST PUBLISHING CO.,
19 Park Place,
New York.

We can save you Fifty Dollars when you Build. See



A complete set of Plans to build from, simply state about price of dwelling desired. 25 cts. in stamps. Our book "Beautiful Homes," 25 cts. Our monthly book "The National Builder," 25 cts. Address

The National Builder, Adams Exp. Bldg., Chicago, Ill.



GOLD MEDAL, PARIS 1878.

W. BAKER & Co.'s Breakfast Cocoa



from which the excess of oil has been removed,

Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

TEAS

REVOLUTION IN PRICES.

Direct from TEA GROWERS to TEA POT.

Finest Teas Imported.

Send in your orders at once. On $20.00 Tea and Baking Powder orders, we will allow you a **Complimentary,** in any kind of Tea you may select, equal to **25** per cent. and **Pay all Express Charges.** This is an unprecedented offer. Remember we are the **"Old Reliable,"** THE GREAT AMERICAN TEA COMPANY Established 1861. No discounts, No Premiums, No Panels.

PRICES OF TEAS & BAKING POWDER.

OOLONG,	30, 35, 40, 50, 60, best 65 cts. per lb.
MIXED,	30, 35, 40, 50, 60, best 65 " "
JAPAN,	35, 40, 50, 60, 70, 80, best 90 " "
ENGLISH BREAKFAST,	35, 40, 50, 60, 70, 80, best 90 " "
YOUNG HYSON,	35, 40, 50, 60, 70, 80, best 90 " "
IMPERIAL,	35, 40, 50, 60, 70, 80, best 90 " "
GUNPOWDER,	50, 60, 70, 80, 90, best 1.00 "
BASKET FIRED JAPAN,	50, 60, 70, 80, best 90 " "
CONGOU ENGLISH BREAKFAST,	50, 70, best 90 " "
SOUCHONG "	" 50, 70, best 90 " "
FORMOSA OOLONG,	50, best 65 " "
ORANGE PEKOE,	50, best 70 " "
ASSAM,	50, best 70 " "
BAKING POWDER, in One Pound Tin Cans,	45 cts. per can.
BAKING POWDER, in Half-pound Tin Cans,	25 " "

All goods warranted to give perfect satisfaction, or they can be returned and exchanged or money refunded, and all expenses paid by us.

THE GREAT AMERICAN TEA COMPANY,

— IMPORTERS, —

31 & 33 Vesey St., P. O. Box 289. New York.

N. B.—Only inducements are *Best Goods* at *Lowest Prices.*

PUBLICATIONS OF THE

ANALYST PUBLISHING CO.

THE AMERICAN ANALYST.
Weekly. Every Thursday. $1 per year.

THE ROOFER, TINNER AND SHEET-IRON WORKER.
Monthly. 15th each month, $1 per year.

THE LEATHER MANUFACTURER.
Monthly. 1st each month. $3 per year.

Reliable agents and representatives wanted everywhere on liberal terms. Address

ANALYST PUBLISHING CO.
19 PARK PLACE, NEW YORK.

"BILLET"

are

Carefully Selected

French Sardines,

Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS.

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,

HOWARD STREET, BOSTON, MASS.



We Can Save You Fifty Dollars When You Build.

If you are thinking of building a home, here is an opportunity to secure one or several designs of houses which will aid you in deciding just what you want.

PLANS READY TO BUILD FROM

ONLY 25 CTS. EACH

Or Five Sets for One Dollar.

The designs given below to select from are practical and are drawn to a large scale by Geo. O. Garnsey, architect for THE NATIONAL BUILDER. Each one consists of a large, beautifully colored picture of a front elevation, including the floor plans, the details, the specifications, and carefully prepared estimates of cost, and all ready to build from. By a special premium arrangement we are enabled to sell these plans at the above extremely low price. **Specify number of Design.** Send all orders to

THE ANALYST PUBLISHING CO.,

No. 19 PARK PLACE, NEW YORK CITY.

No. 2. **Clover Cottage.** Neat, cosy and modern. Cost, $1,960.
No. 3. **6-Room Elegant Brick Residence.** Suitable for city or country; Handsome Front, Good Basement, etc. Cost, $3,500.
No. 4. **6-Room Modern Residence.** Handsome Front, with broad circular Veranda. Cost, $3,000.
No. 5. **Cheap 5-Room Genteel Cottage:** With Reception Hall, 9x12, and good Basement. Cost, $2,000.
No. 6. **8-Room Residence.** Handsome Front, neat Porch, etc. One of a series of residences much in demand. Cost, $3,000.
No. 10. **Bank and Store Fronts.** Showing different styles of Show Windows, and highly Ornamented Fronts. Two designs. Cost, $1,613 and $1,325.
No. 17. **Double City Flat Building.** Six rooms in each flat; building adapted to narrow lot. Ornamental, Romanesque Front. Cost, $10,000.
No. 19. **Queen Anne Cottage, Eight Rooms.** Good light; exhibiting good effect. Cost, $4,000.
No. 21. **Maplewood Cottage, Three Rooms.** Abundance of piazza. Very neat and convenient. Cost, $1,000.
No. 22. **Hyacinthe Cottage, Three Rooms.** Very odd and pleasing. Cost, $750.
No. 23. **Clovernook Cottage.** New in style. Cost, $750.
No. 25. **Eastlake Cottage, 8 Rooms.** Neat 2-story Frame. Cost, $1,875.
No. 26. **Rustic Stone Cottage, Six Rooms.** This design is handsome. Cost, $2,575.
No. 38. **Cheap City House, Eight Rooms.** Suited for inside lot; nicely laid out. Cost, $2,600.
No. 40. **Charming Suburban Cottage of Five Rooms.** Very roomy and convenient. Cost, $2,500.
No. 42. **Beautiful 6-Room Cottage.** Handsomely designed; all modern improvements. Cost, $3,100.
No. 49. **Neat Village Church.** Seating capacity about 600. Cost, $7,500.
No. 50. **Store and Office Building.** Brick; 2 stores and 8 offices; very handsome. Cost, $7,000.
No. 51. **Modern Suburban Residence of Nine Rooms.** Beautiful design. Cost, $2,100.
No. 57. **Rosedale Cottage, 3 Rooms,** With Bay Window, Frame. Cost, $1,000.

OUR GREAT OFFER

TO SUBSCRIBERS

TO THE

AMERICAN ANALYST.

We will send the **ENTIRE SET OF DICKENS' WORKS,** *in* **TWELVE VOLUMES,** *as here described, all postage prepaid by ourselves, also* **THE AMERICAN ANALYST** *for* **ONE YEAR,** *upon receipt of* **$1.50,** *which is only* **50** *cents more than the regular subscription price of this paper.* Our readers, therefore, practically get a set of Dickens' works in twelve volumes for only **50** cents. This is the grandest premium ever offered. Up to this time a set of Dickens' works has usually been $10.00 or more. Tell all your friends that they can get a set of Dickens' works in twelve volumes, with a year's subscription to **THE AMERICAN ANALYST** for only **$1.50.** Subscribe now and get this great premium. If your subscription has not yet expired, it will make no difference, for it will be extended one year from date of expiration. We will also give a set of Dickens', as above, free and post-paid, to any one sending us a club of three yearly subscribers.

ADDRESS:

THE ANALYST PUBLISHING CO.
No. 19 PARK PLACE,
NEW YORK.

TABASCO PEPPER SAUCE,

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced by connoisseurs to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY'S SON,

NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

NATRONA BI-CARBONATE OF SODA.

(ABSOLUTELY PURE.)

The nature of the raw material from which NATRONA BI-CARBONATE OF SODA is made—viz., kryolith, a mineral containing *pure sodium*—insures a purity and uniformity of product which cannot be obtained from any other known material. In making BI-CARB. SODA from any other raw material, the use of sulphuric acid is a necessity, but none is used in any part of the process of making NATRONA BI-CARB.; hence its entire freedom from the slightest trace of arsenic, which is always present in ordinary soda. Its absolute purity and entire freedom from all traces of *sulphate of soda*, common salt and other impurities, render NATRONA BI-CARB. NEARLY TASTELESS, and being bolted through the finest bolting-cloth, insures the finest stage of division.

To these indisputable facts the attention of CONSUMERS of soda is specially called. They are IMPORTANT, and should influence both those who use and those who sell soda, to buy and sell NONE BUT THE BEST.

The NATRONA BI-CARB. Soda is kept in stock by almost every wholesale druggist and grocer throughout the United States, of whom it may be ordered.

Natrona Bi-Carb. Soda is unequaled by any other brand of English or American Manufacture.

PENNA. SALT MANUFACTURING CO.,

NATRONA CHEMICAL WORKS. PHILADELPHIA, PA.

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

To Subscribers, Readers and Advertisers.

SUBSCRIBERS' attention is called to the great variety of interesting and instructive subjects treated in this number. We respectfully ask the co-operation of our subscribers in extending our Subscription list, which will enable us still further to increase the value of the AMERICAN ANALYST to them.

The CASUAL READER is specially requested to examine our liberal premium offer.

ADVERTISERS who do not know of this Journal already, are respectfully referred to article headed "A Business Benefit."

ALL are kindly requested to peruse this number thoroughly.

The AMERICAN ANALYST can be had at any news stand in the United States. Any newsdealer will take orders for it, the American News Company being our wholesale agents. All postmasters will receive subscriptions.



RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,
184 Greenwich St., N. Y.

INSTRUCTIONS TO SUBSCRIBERS.

The **Names of all Subscribers** are registered as soon as received, and paper is always promptly forwarded.

Postage.—The postage to all parts of the United States and Canada is paid by the publisher.

Remittances of small sums may be made with comparative safety in ordinary letters. Sums of one dollar or more must be sent by registered letter or P. O. money order, otherwise we cannot be responsible for same. Silver must not be sent in a letter.

Postage Stamps will be received for the fractional part of a dollar, and in any amount when it is impossible for patrons to procure bills, but you must send one or two-cent stamps only.

SUBSCRIPTIONS.—The AMERICAN ANALYST will be sent one year to any subscriber for ONE DOLLAR. New subscriptions can begin at any time.

We Stop the Paper at the expiration of the time paid for unless a renewal of subscription is received. Those whose subscriptions have expired must not expect to continue to receive the paper unless they send the money to pay for it.

Change of Address.—Subscribers wishing their addresses changed must invariably give their former as well as new address.

Missing Numbers.—It occasionally happens that numbers of our paper sent to subscribers are lost or stolen in the mails. In case you do not receive any number when due, write us a postal card and we will cheerfully forward a duplicate of the missing number.

Most Important of All.—In every letter that you write us, never fail to give your full address, plainly written—name, post-office, County and State.

Address all letters to

THE ANALYST PUBLISHING CO.,
19 Park Place, New York.



A HIGH-GRADE PIANO
AT A VERY MODERATE PRICE.
NEW DESIGNS. FANCY WOODS.
Terms Easy. ✣ Monthly Instalments.
TWO, THREE AND FOUR PEDALS.
Catalogues, Prices, Terms, Etc., sent to any address.
EVERY PIANO WARRANTED 5 YEARS.
(Mention this Paper.)

THE LABORATORY.

To Inventors, Manufacturers and Applicants for Patents

The AMERICAN ANALYST may be consulted upon all matters involving theoretical or applied chemistry. Advice and opinions given. Analyses and assays made. Patents perfected and secured. Terms reasonable.

Address, AMERICAN ANALYST,
19 Park Place, N. Y.

SWIFT'S
CHOICE
Chicago Dressed Beef
AND
MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,
UNION STOCK YARDS,
CHICAGO, ILLS.

THE ORIGINAL AND GENUINE
(WORCESTERSHIRE SAUCE).



LEA & PERRINS' SAUCE

In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—

Lea & Perrins

Beware of Imitations; see that you get Lea & Perrins'

For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS, NEW YORK.

GLENN'S
SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,
C. N. CRITTENTON,
115 FULTON STREET,
NEW YORK.

Be progressive and keep abreast of the times. Avoid dyspepsia by using **Lard Compound** and **Cottolene,** a substitute for lard.

The highest medical authorities pronounce them healthful; and expert cooks commend them.

Our **Clairette** brand of cotton oil soap is the purest and best laundry soap in the market; as pleasant to the hands as genuine castile.

N. K. FAIRBANK & CO.,
CHICAGO AND ST. LOUIS.

The Standard of Excellence.
KINGSFORD'S
OSWEGO
Pure and Silver Gloss



STARCH
KINGSFORD'S
OSWEGO CORN STARCH
FOR
Puddings, Custards, Blanc-Mange, Etc.
THE PERFECTION OF QUALITY.
WILL PLEASE YOU EVERY TIME.
Always ask your Grocer for these goods.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 28. NEW YORK, THURSDAY, JULY 9, 1891. WHOLE No. 228

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - $1 per year.
Single Copies, - - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.

Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.

Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,

H. LASSING, M. D., } *Editors.*
T. P. McELRATH, }

No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

A Day's Work 327
Adulterated Essences 330
Beneficent Bacteria 326
Bodily Solicitude 328
Casting a Statue 330
City Noises 329
Domestic Dietetics 328
Editorials 325
A Pure Food Association; An Earnest Missionary; French Sardines; An Overflowing Desert.
Gold and Silver 328
Sauces and Digestion 329
Thermometers 326

A PURE FOOD ASSOCIATION.

The two meetings which have been held at the Mercantile Exchange, in Harrison street, within a few days, for the purpose of forming a Pure Food Association have been incorrectly reported in the daily papers. The object of the gentlemen who were present at those meetings may have been originally to form such an association, but wiser counsels prevailed and the matter was left in a somewhat chaotic state. It was found to be impossible to establish any mutually acceptable standard as to what constitutes purity. No two manufacturers could agree as to where the line between purity and adulteration should be drawn, as what one man might consider pure another would condemn as sophisticated. It was found that the definition of adulteration in a legal sense was something entirely different from the commercial signification of the phrase. There were illustrations brought to bear upon the subject which proved clearly that what the law defined to be an adulteration was an absolute necessity in the preparation of some food products to prevent their becoming noxious. Another difficulty in the way was found to be the readiness and anxiety shown by manufacturers of questionable food products to range themselves alongside of well known manufacturers of the highest grade of pure foods, thus to enable themselves to parade before the public as in good company. Another danger point was found in the tendency of some to switch a really well intended movement on to a side track of an advertising show, or simply a money making scheme. There are enough manufacturers of high grade food products of unquestioned purity who are ready to go into any movement which can prove to them that the enterprise is honestly designed and bears on its face a probability of practical success. But naturally they will be beset by men who have their little axes to grind. Such a movement, if kept strictly to its prime object and honestly and faithfully managed, would be and deserves to be a success. Though yet only in an embryo state we understand the plan is to form an incorporated limited liability company with a sufficient capital to give exhibitions of the products of the members only, and thus educate the public up to a clear apprehension of what pure, first-class food products are, and to teach them that such goods are intrinsically cheaper than adulterated goods at nominally lower prices, and to stimulate emulation among competing manufacturers. It is proposed to hedge this about with safeguards, by limiting the amount of stock held by individual members, making it possible for the management for cause to cancel membership and buy back the stock, exercising a strict censorship over admission of members, etc., practically on the lines laid down and advocated for the past seven years by the AMERICAN ANALYST.

AN EARNEST MISSIONARY.

There arrived in this city a few weeks ago by steamer from Liverpool, a devoted woman who was returning from a missionary tour of the globe, of a character that probably has no parallel in the records of foreign mission labor. Mrs. Mary Clement Leavitt, of Boston, left this country eight years ago with a steamship ticket in her pocket and a plentiful supply of faith. She was a member of the Women's Christian Temperance Union, and at the National Convention of the organization in 1883 it was decided to send out a world missionary. Volunteers were asked for, and Mrs. Leavitt was the first to apply. She was accepted. It was understood that the association would pay all the expenses of the trip, and before the Convention adjourned $1,000 had been subscribed. She determined not to accept it. "I'm going on God's mission," she said, "and he will carry me through." She purchased her steamship ticket with her own money. Very little has been heard of her since she went away. Occasionally a letter was printed in the organ of the association telling of her progress. There was great rejoicing a month ago when a letter brought the news that she had nearly completed her journey and would be home again. Mrs. Leavitt will remain in Boston until October, when she will come to New York to attend the national Convention. In the eight years she has been away Mrs. Leavitt has visited the following places: Hawaiian Islands, New Zealand, Australia, Tasmania, Japan, China, Siam, Straits settlements (Singapore and Malay Peninsula), Burmah, Hindostan, Ceylon, Mauritius, Madagascar, Natal, Orange Free State, Cape Colony, England, Ireland, Scotland, Wales, Congo, Free State, Old Calabar, Sierra Leone, Madeira, Spain, France, Holland, Norway, Sweden, Finland, Denmark, Germany, Italy, Greece, Egypt, Syria, and Turkey. She has organized 86 W. C. T. U's, 24 men's temperance societies, mostly in Japan, India and Madagascar, and 23 branches of the White Cross; has held over 1,600 meetings; has traveled nearly 100,000 miles, and has had the services of 229 interpreters in 47 languages. Her expenses have been paid with money donated to her at the places she visited.

FRENCH SARDINES.

It is stated in an official report from Bordeaux, lately published, that last year's season was one of the most disastrous ever experienced by French sardine packers. Hardly any stocks had remained from the previous year, and the demand was active at the commencement of 1890; but, unfortunately for the packers, the cool summer had a prejudicial effect upon the results of the fishing, and high prices had to be paid for the small quantities of fish which were to be obtained for preserving. Under other circumstances this state of things would have caused a rise of 50 per cent. perhaps in prices at Bordeaux; but France has for some years already lost the monoply of the sardine-packing industry, and the Portuguese factories last year again furnished a more than sufficient supply towards making up for the deficit in the French output. While the average cost of the fish on the French coast was about $4.00 per thousand, the averge price last year on the Portuguese was only about 75 cents. It is thus evident that the French sardine packers were unable to contend, or at all events, to derive a profit from their business, against such an overwhelming competition. The sardine syndicate has come to nothing.

AN OVERFLOWED DESERT.

A phenomenon that at this writing has not been accounted for is reported to be manifesting itself in California. The Colorado desert in San Diego County is well known as an inland depression 270 feet below the level of the sea in its deepest part, and covering an area of 3,000 square miles. On the evening of June 27 the workmen at the great salt works at Salton were amazed to see streams of water trickling down the val-

ley. These increased in size until for several miles around the earth was covered by a shining lake of salt water thirteen inches in depth. On June 30 the water was fifteen inches deep. The current shows the water is coming from the direction of New River, which receives its water from the Colorado. The theory of those familiar with the desert is that an earthquake or some other convulsion has forced an underground artesian stream of water up through the sandy soil. This tract bears evidence of having been flooded many years ago, and Indian tradition declares that a great inland lake stretched at one time from this region to the San Jacinto Mountains, that separate the desert from the orange groves of San Bernardino County. The Southern Pacific Railroad passes through the basin more than fifty miles, its lowest point being 263 feet below the sea level. The Colorado River is 160 feet above the sea level at Yuma. If the subterranean passage connects with the Colorado above Yuma the lake will be over four hundred feet in depth and over fifty miles long. If the waters continue to rise the Southern Pacific track will be submerged nearly one hundred miles, and the great desert of Colorado will be converted into a vast lake.

BENEFICENT BACTERIA.

THE INTERDEPENDENCE OF LIVING ORGANISMS.

We are so much accustomed to regard bacteria as the most dangerous foes of humanity, that the attempt to demonstrate their utility and essential importance may seem almost paradoxical. Nevertheless, it would be as unjust to condemn the whole class for the diseases engendered by a few as to condemn humanity for the offences of its criminals. As a matter of fact, the services of bacteria in the natural economy of the earth are so important that disease germs may fairly be regarded as isolated, scattered bands. The elimination of the bacteria from the earth would be immediately followed by our own downfall. Refuse would accumulate in piles mountains high, while the plants that depend upon it for the greater part of their sustenance would perish in sight of plenty from the want of microbes to convert it into assimilate food. Every trace of organic matter is greedily seized on by microbes, which convert it into plant food or decompose it into its original elements, and thus render the earth continuously habitable for man and beast. These bacteria are so small that a million of them may constitute a mass hardly visible to the naked eye; nevertheless, such is their capacity for increase, under favorable conditions, that the progeny of a single bacteria, if it could multiply unchecked for fifteen days, would constitute a mass exceeding the cubic contents of the ocean. Their increase is arrested only by failure of food supply; they are consequently always in sufficient numbers for the conversion of all the dead organic matter of the earth into food substance for living plants. The manure which the farmer spreads on his fields contains billions of these industrious laborers, all actively engaged in converting the organized elements into plant food, and even in rendering the inorganic substances (lime, potash, phosphates, etc.) assimilable. The most important soil constituents for the farmers are the nitrogenous compounds, the presence of which in manure constitutes its prime value as a fertilizer. Plants take nitrogen from the air; they must take it up by their roots from the soil, but nitrogen is not a proper constituent of soils. In a state of nature the soil gets a supply from the substance of the plants and animals that die on its surface, but grain crops soon exhaust this natural supply, and the fertility of the soil can only be maintained by the addition of nitrogenous substances, which the bacteria, in pursuit of their own well-being, convert into assimilable plant food. But experience has taught the farmer that while grain and root crops exhaust the soil of its nitrogen, beans, peas and other leguminous plants, so far from exhausting, add to its supply, thus rendering possible a high cultivation by rotation of crops, with considerable economy of manure. But these leguminous plants are no more capable than others of drawing their nitrogenous supply from the atmosphere; modern investigation has demonstrated that it is the work of bacteria which finds sustenance and habitation in the roots of the leguminous plants, where they multiply from generation to generation, repaying the service by dying there and sacrificing to the plant all the nitrogen they have taken from the atmosphere in assimilable form. The little swellings on the roots which constitute at once their dwelling place, laboratory and tomb may be readily recognized on removing an acacia, or mimosa, or other leguminous plant from the pot in which it is grown. Not less beneficial are the bacteria as purifiers of water. If a vessel of water containing animal or vegetable refuse is allowed to stand in the open air, the fluid gradually clears until every particle of dead organic matter is consumed, when the bacteria cease their activity and sink to the bottom. The same thing occurs on the great scale in nature: the Seine, which at Paris receives an enormous amount of refuse, is clear and pure at seventy kilometres down stream. The bacteria have consumed the refuse. The Elbe, the receptacle of the refuse of so many cities, is drinkable at Hamburg from the self same cause. The relation of mutual interdependence subsisting between leguminous plants and the microbe guests of their roots, scientifically characterized as a *symbiotic* relation, exists between other plants and microbes. A precisely similar relation exists between a fungus and plants growing in soils rich in humus, which consequently require special treatment under cultivation. The heaths, rhododedendrons, daphnes, etc., growing in such soils support a thread fungus on their roots, which reciprocates the service by supplying the plants with nitrogen, and if the gardener would cultivate them successfully he must import the soil as well as the plants, and be careful, moreover, not to allow the soil to dry lest the fungi die. The lichens and algæ, insignificant and lowly as they seem, play a very important role in the economy of nature. They sink into insignificance when the conditions are favorable to the support of higher vegetation, but the task is theirs to create the conditions necessary to the growth of higher plants. Ascend the mountains or penetrate into high latitudes to the boundaries of eternal snow, and every rock is found covered with lichens, the support of the reindeer, and commonly, but improperly, called reindeer moss. With its slender filaments it mines a foothold for itself in the solid rock; the carbonic acid which it secretes, being dissolved in water, sets free the nilic acid, and in this way decomposes granite, gneiss, micaceous shale, etc. Its remains, in course of decomposition, afford sustenance for mosses, and in this way the solid rock is decomposed into plant-supporting soil. The imbauba tree (*cecropia*), of Brazil, exhibits an interesting instance of *symbiosis* between the tree and a species of small black ant which subsists on it, and keeps watch and ward on every branch. The leaf-cutting ant which inhabits this region has a strong partiality for imbauba leaves, and but for its defenders would attack it so energetically that it would soon become extinct; but woe to the leaf-cutting ant that would essay to cut a leaf of the imbauba tree! The examples selected are prominent instances of the absolute interdependence of certain organisms, and suffice to suggest the idea of a common interdependence of all living organisms. Each is dependent upon the others for the gratification of its needs. No one great section of life could be eliminated without prejudice to the rest. We ourselves could not exist but for bacteria. The most pregnant examples are those which come under the head of *symbiosis*. But since the life of every living organism on earth is more or less conditioned by the lives of all other organisms, it is quite admissible from a higher standpoint to regard all life on earth as a single great *symbiose*.

THERMOMETERS.

THEIR PRINCIPLE, CONSTRUCTION, AND INDICATIONS.

How frequently does one hear one person complaining of the excessive heat of a room, and another saying, "Do you think so? I do not find it uncomfortably warm." How often do they refer to a little instrument hung up perhaps on one of the walls, which tells them at once whether the heat of the room is greater than it should be or not. Yet few are aware of the physical laws which enable this little instrument to impart such valuable and trustworthy information to them, and fewer still know how it has been constructed. It is an everyday commonplace, thing, useful, cheap, and to them uninteresting. Attention may, perhaps, be drawn to the artistic carved frame in which it lies; but the workaday plain little thermometer comes in only for so much attention as is compelled by occasional discomfort or curiosity. Yet how essential is this little thing in one's daily life! By a little attention to this instrument we can contribute to the comforts of our life and prevent illness when well; and how much more is it necessary to have our little friend at hand when ill! Let us go into a hospital ward and see what use the instrument is put. The ward, with its lines of clean beds looks charming, and one feels neither too hot nor too cold. Perhaps there are several cases of typhoid fever in the ward: the little thermometer tells the house physician on his arrival many important facts about his cases, and every one well knows that when the senior physician comes round, one of his first questions in these cases will be, "What is the temperature?" One of the cases is worse, and must have a bath. The bath is ordered, in the language of the thermometer, to be of so many degrees. So you see that the little thermometer, like a good minister or doctor, does its work with equal truth and conscientiousness in whatever circumstances or conditions of life it may happen to be placed; therefore it behooves us all to have some intelligent idea, however slight, of the working ways of things like the thermometer, so useful, so liable to be overlooked. You may say, "Oh, but one can always tell whether a thing is hot or cold by feeling it!" True; but to what degree can you determine it? Let us give you an example. Supposing you took three basins: one having very hot water in it; the second, ice-water; and the third, moderately tepid water. If you placed your right hand in the cold water, and left hand in the hottest water, and after holding them there some time put both your hands in the tepid water, to the right hand it would feel warm, to your left hand it would feel cold. Which hand are you to believe? Assuredly there is a failing somewhere; and it lies in the fact that you cannot be sure of the previous temperature of your hand before feeling a body. Now the thermometer is not to be deceived in any way by sensation: it will always give the same record for the same degree of heat. And you must not confuse "degree" with "amount" of heat. If you had a large basin full of boiling water and took a cupful away, the cup would contain water of the same "degree" of heat; but there would be very much less heat in the cup as regards "amount." Inanimate objects are divided into "solids," "liquids," and "gases." The effects of heat on solids are twofold. Bodies are said to be made up of elementary particles called atoms, and roughly these atoms are in the closest proximity in solids, less in liquids, and least of all in gases. The first effect of the application of heat to a solid, such as iron, is to separate its atoms further from one another, and so make it larger. In other words, it expands. If heating be carried on to a greater degree, the solid becomes liquid, *i. e.*, adopts the shape of any vessel it may be in, having no shape of its own; and lastly, if the heating be carried on still further, the liquid becomes a gas. The *rationale* of the thermometer depends on the expansion of bodies exposed to the varying conditions of

heat. You know that when a thermometer endures a high temperature, the mercury rises in the tube and occupies more space. I dare say that many of you have noticed thermometers which had in them a reddish fluid instead of mercury. This is colored alcohol, and we shall consider the comparative merits of this kind of thermometer with the ordinary mercury one, later on. It occurred to scientific men that as certain things expanded under the influence of heat, the amount of expansion might be made to represent the degree of heat applied. Solids change in too slight a degree to lend themselves to purposes of measurement of fine gradations of temperature; gases, on the other hand, are too much affected by viarations of temperature to be useful for practical purposes; liquids, however, present the happy mean, and of these mercury is the liquid metal which expands most constantly equally for equal degrees of heat. A tube, having a fine bore known as a capillary bore, from the Latin *capillus*, a hair, is taken, and at one end of this a small bulb is made by means of a very hot flame; at the other end a funnel is made, into this funnel mercury is placed, and the bulb is heated. Some of the heated air rushes out through the mercury, and on cooling, some mercury is forced into the tube to take the place of the air which has escaped. This mercury finds its way into the bulb and is in its turn heated; it becomes volatile, and the whole tube being full of mercury and mercury vapor, all the air is driven out, and, on cooling, the tube fills with mercury from the funnel. The whole thing is again heated, and whilst hot the funnel is removed, and the upper end of the tube is sealed. On cooling, of course the mercury contracts and leaves above it a perfect vacuum. Our thermometer is now made, but we have to graduate it. It has been discovered that the temperature of melting ice is a constant one, that is to say, it is always the same. This temperature is known technically as the "freezing-point." The first thing to be done with our thermometer is to see at what level its freezing-point stands, *i. e.*, how high the mercury rises when the bulb of the thermometer is plunged into melting ice. This point is scratched on the glass with a diamond; but this fact is not enough to have ascertained. It has also been demonstrated that, at a certain pressure of the air, steam given off from boiling water is always of a constant temperature; it is necessary to obtain these conditions to ascertain what is called the "boiling" point of our thermometer. A special appartus is used, which is so devised that the whole of the thermometer, as well as the bulb, is enveloped in steam. Of course the mercury rises to a certain height, and this level also is recorded on the glass tube in the same way as the "freezing-point." Thus we have two fixed points from which to take a start in making our thermometer; but our own sensations are acute enough to distinguish between freeziug and boiling in the general acceptance of those terms, so we must subdivide the distance between the freezing and boiling points in our thermometer, and we may do so in various ways. Many of you may have noticed, on the thermometer at home, that the scale, as it is called, is printed on the frame of the thermometer, and the letter F. is placed at the top or bottom of the scale. This letter F. is distinctive: it is the first letter of the name of the chemist who invented the particular scale to which it is appended. His name was Fahrenheit. Fahrenheit found that he could artificially produce a much greater cold than that of melting ice, by means of a mixture of salt and snow. He therefore called the temperature of melting ice 32 deg., and that of snow and salt 0 deg., or zero. Boiling point on Fahrenreit's scale is 212 deg., so that between freezing-point and boiling-point on Fahrenheit's scale there are 180 degrees, or as it is written, 180 deg. This measurement of temperature is the one most in vogue in our own country; but amongst scientific men, and in most European countries, another scale is in use: this is the scale of Celsius, and is generally known as the "Centigrade" scale, from the following facts. Boiling-point and freezing-point are ascertained as already described, and freezing-point is called 0 deg., or zero, and boiling-point 100 deg.; and the distance between 0 deg. and 100 deg. is equally divided into a hundred parts, each of which is called a degree centigrade. Although these two scales of measurement are best known, there is another which you will see in those little ornamental thermometers which the German-Swiss make, and which is the scale used in Russia and Sweden; this is the scale of Reaumur. In this, as in the centigrade, or Celsius, scale, the freezing-point is 0 deg., but the distance from freezing to boiling-point is only divided into eighty equal parts, so that boiling-point Reaumur is 80 deg. The thermometers which are made with a red fluid inside instead of metallic mercury, are made with alcohol instead of mercury, and the alcohol is colored with cochineal or carmine, sometimes with Prussian blue. The method of making these thermometers is similar to that employed in those prepared with mercury, but they have a rather different character, which it is worth while for us to mention. Mercury at certain very low temperatures freezes, and therefore ceases to be of any service in recording low temperatures; alcohol has never been frozen yet, and therefore is of use in this way. Alcohol, however, boils at a lower temperature than water, and becomes a vapor; it cannot, therefore, be used for such high temperatures as mercury. The old-fashioned thermometers were made with a small spherical bulb; these, however, are not the best in shape, and the bulbs are made larger and thinner, thus giving a larger surface of exposure. Of such shape are the clinical thermometers used by physicians, which register from about 95 deg. Fahr. to 113 deg. Fahr. One often sees in a room the thermometer hung up against a wall. To do this is, strictly speaking, wrong; for if the wall communicates with the outside, and it be a northern wall, the temperature on that wall will be lower than the temperature in the middle of the room, where it is free of any object likely to affect its temperature. Similarly, a thermometer intended to take the temperature of the outer air is often placed outside a window, with the not sun shining on it. The thermometer, of course, registers much to high a temperature: it should be suspended in the open air, and in the shade.—*Demorest's Magazine.*

A DAY'S WORK.

WHAT IT CONSISTS OF IN EUROPEAN COUNTRIES.

A Turkish working-day lasts from sunrise to sunset, with certain intervals for refreshment and repose. In Montenegro the day-laborer begins work between five and six in the morning, knocks off at eight for half an hour, works on till noon, rests until two, and then labors until sunset. This is in summer. In winter he commences work at half past seven or eight, rests from twelve to one, and works uninterruptedly from that time to sunset. The rules respecting skilled labor are theoretically the same, but considerable laxity prevails in practice; in Servia the principle is individual convenience in every case. In Portugal from sunrise to sunset is the usual length of the working day. With field laborers and workmen in the building trades the summer working-day begins at half past four or five in the morning and ends at seven in the evening, two or three hours' rest being taken in the middle of the day. In the winter the hours are from half past seven to five, with a shorter interval of repose. In manufactories the rule is twelve hours in summer and ten in winter, with an hour and a half allowed for meals. Eleven hours is the average day's work in Belgium, but the brewers' men work from ten to seventeen hours; brickmakers sixteen; the cabinet-makers of Brussels and Ghent are often at work seventeen hours a day; tramway drivers are on duty from fifteen to seventeen hours, with an hour and a half at noon; railway guards sometimes know what it is to work nineteen and a half hours at a stretch, and in the mining districts women are often kept at truck loading or similar heavy labor for thirteen or fifteen hours. The normal work-day throughout Saxony is thirteen hours, with two hours' allowance for meal taking. In Baden the medium duration of labor is from ten to twelve hours, but in some cases it far exceeds this, often rising to fifteen hours in stoneware and china works and cotton mills, in saw-mills to seventeen hours; while the workers in the sugar refineries, where the shift system is in vogue, work twenty-four hours free; and in too many of the Baden factories Sunday work is the rule. In Russian industrial establishments the difference in the working hours is something extraordinary, varying from six to twenty. It is remarkable that these great divergences occur in the same branches of industry within the same inspector's district and among establishments whose produce realizes the same market price.—*Chicago Herald.*

GRAMMATICAL.— Teacher—"In the sentence, 'The sick boy loves his medicine,' what part of speech is loves?" Johnny—"It's a lie, mum."—*Medical World.*

CHEAP LIVING.—An official weekly journal in Germany calculates how an invalid workingman can live for 300 days in the year from the $75 allowed him by the Old Age and Invalid Insurance Fund: First breakfast, $11.25 annually; second breakfast, $7 50; dinner, $18.75; afternoon coffee, $7.50; supper, $15; rent, $11.25; clothing, $4.75.

ELECTRICAL ALARM.—Paris is laughing over a joke about an American inventor, who is said to have patented an electric corset that is to bring about the reign of morality at once. If one of these articles is pressed by a lover's arm it at once emits a shriek like the whistle of a railway engine, and the inventor claims that he has already married off three of his daughters, owing to the publicity thus thrust upon a backward lover.

BRUNETTE AND BLONDE. — A statistical inquiry undertaken by Dr. Beddoe has brought out the curious fact that in England a brunette has ten chances of being wedded to nine chances if she is a blonde, and the English women are gradually losing their fairness of skin and hair in darker types, simply because men persist in selecting the darker haired women for wives. The same thing is happening in Germany, France and Switzerland.

FRECKLES.—Halkins states that in carbolic acid we have a certain cure for freckles. The skin, first washed and dried, is stretched with two fingers of the left hand, and each freckle is carefully touched with a drop of pure carbolic acid, which is allowed to dry on the skin. Under its action the part becomes white and burns for a few minutes. In from eight to ten days the cauterized scale falls off, and the spot, at first a rose red, soon assumes its natural color.—*Edinburgh Medical Journal.*

ELECTRICITY FOR A FELON.—By electricity used as follows, a felon is destroyed by lightning speed: Use a good galvanic battery with ordinary power, then fill two glass dishes or cups with water, place the finger effected with the felon in one cup, in which you have placed the positive end of the electric wire; then place the next sound finger in the second glass cup, in which you have inserted the negative pole; continue passing the current from twenty to thirty minutes, and, if required, repeat this case in four or six hours. The pus that is exosmosed through the periosteum will appear as a pimple at the skin in a few days, and may require to be pricked with a needle.—*St. Louis Clinique.*

ELECTRICAL ENGINEERS.—The first class to receive the degree of Electrical Engineer (E. E.) from Columbia College was graduated June 10. Five post-graduate students received the degree. They had first obtained a thorough collegiate education, and then taken a two years' course entirely devoted to strictly electrical engineering work, without being interrupted or confused by other studies at the same time. Prof. Francis B. Crocker writes that this plan is found to give most excellent results, and it certainly seems a logical method of pursuing a course of study in so difficult a subject as electrical engineering.

BODILY SOLICITUDE.

THE PRIMARY PROBLEM FOR THE CONSIDERATION OF WOMEN.

While on every hand moral work, intellectual work, social work awaits every woman, young or old, whose life is so rich and full that it overflows into the world from the home, I am glad to see that there seems to be a growing appreciation of the importance of hygienic work as underlying all work of soul or brain. Whether for ourselves or for others, the first work toward enlarging and dignifying life is a work for the body—that body which is too often so unlike the temple in which God meant the human soul to dwell as the soul itself is unlike what he meant the dweller to be. All of us who have sought to inspire the very wretched classes with love of knowledge or with aspirations after better morals, have already found that our first battle would have to be in another field, that we needed to conquer outposts held by filth, by foul air, by bad food, by dark and dirty dwellings, before we could approach the citadel of the soul. We must send the plumber, and teach the religion of the scrubbing brush and the broom, and of light and air and food, and must drive out the multiform demons of dirt. Turning from the sufferers in the lower to those in the higher classes of life we find no less the hampering influence of disease. Could the women of the land, alive, as they are coming to be, to every mode of development and phase of progress, become thoroughly aroused to the fact that all progress along every line stops, and the backward course begins, both for the individual and the race, as soon as disease or feebleness of body sets in, they would have struck at last the lowest strata of reform, and we could hope for the future of the race. The foundation of all culture and of all development must be laid here, and women's hands are the ones to lay it. Build we ever so fair a structure on the basis of intelligence and goodness, and soon or late, if the hygienic conditions are wrong, it is undermined and falls. Without health the beautiful woman ceases to be beautiful, and of little avail are all our years of training and education if the possessor of their results is to pass her life a helpless victim of pain. There is a protest against ill in the very air. Disease is an unnatural and abnormal thing, and health resists it as long as it can. It takes the spring out of the steps and the ring out of the laugh, and hushes the voices of the little ones. And to a great extent it does this whether the invalid is patient and silent or not. The thing that is felt we influence by what we are not, by the much or the little we may say. Sickness is a blight which no woman should permit to come over her home if she can by any possibility cure it or keep it away. And women, we must admit, in all ages have been earnest seekers after and patrons of cures. And the result of all experience and observation convinces that if half the time and vitality spent in seeking a cure and in learning how to endure could have been turned toward prevention it would have given us another race. We need to become possessed by the truth that health is the great possession. Dr. Bartol opens his sermon on the mind cure by the statement that sickness and sin are twin born, and Emerson says that in varying health we have a searching preacher of self-control. How to secure good health, therefore, is one of the first problems for this generation of women. This is the demand their subject will make, of those they are crowning as of the hearth and the home. Give us bright, fresh, kindly hearted sisters, say the lads and the little brothers in the homes. Give us happy, healthy faces over our cradles, plead the babes who find their heaven in mother's eyes. Give us cheer and laughter, a little fun, say the fathers, turning wearily toward their firesides, at the end of a day of toil. Give us a bright word and a helping hand and your dainty touch on household ways, say the mothers who would give their lives any day to see their daughters well and strong and glad. Give us health is the cry from all the world to its women. Gives us girls with a physique that will spare us the morbid brooding of discontent, the hysterical tantrum, the nervous collapse, the look of gloom from the clear wells of their eyes. This is, as I have said, the problem of to-day. It is not our purpose now and here to suggest how best it can be solved. One little single hygienic law of sleep, of diet, of dress, of exercise, the first and simplest that you know, obeyed, and the work is begun. Knowing the next thing to do is not important until you have done the first thing you know.—*Harper's Bazaar.*

GOLD AND SILVER.

HOW THE ORES ARE ASSAYED.

The process of assaying silver ores is based upon the following considerations: Any compound of silver exposed to high heat in the presence of metallic lead or of oxide of lead and of a reducing agent gives up its silver in a metallic state, and in practice an alloy of lead and silver containing all the precious metal of the sample of ore used is obtained. The ore before being assayed is carefully sampled, so as to represent an exact average, as nearly as possible, of the mine, vein, or heap from which it is taken. It is next pounded in an iron mortar and the process continued until it is very finely pulverized. A sample is thus obtained which is given to the assayer. The first operation is to weigh out the powder. This must be done upon a fairly delicate balance. The quantity used for an assay depends upon the richness of the ore; it is very usual to base the weighing upon what is known as the assay ton, a weight of 29.166 grammes. One milligramme bears the same proportion to the assay ton that one troy ounce does to a ton of 2,000 pounds. In weighing, duplicate portions are weighed out representing from a fraction of one to several assay tons, according to the richness of the ore, and the operations are carried on in duplicate throughout. Each sample is mixed with from 8 to 16 parts of very pure, finely granulated lead, called "test lead," and a little borax glass. The fusion is very often done directly in a scorifier. These are shallow clay cups about 2 inches and 2¾ inches in width. The weighed portion of ore with the borax glass and lead being placed in one of these cups, the whole is introduced into a hot clay retort known as a muffle, which is heated in a muffle furnace. The heat is maintained at about 1,600 degrees. At this heat the lead in the scorifier melts and the ore floats on top of it, along with the melted borax glass. Gradually the ore disappears, its metallic constituents entering the lead and its earthy constituents forming with the borax glass a fusible slag. As a constant current of air is drawn through the muffle, the lead rapidly oxidizes and its oxide joins the slag, so that after a little while only a small circle of metallic lead appears in the center of the slag. This circle is gradually encroached upon, and eventually the slag covers over the button of metal, which at once sinks to the bottom and the scorifying is ended. After a little more heating the scorifier is withdrawn from the muffle and its melted charge is poured out into a hemispherical depression in an iron pan, in which it rapidly cools. When cold, a few blows of the hammer, the charge resting on an anvil, knocks the slag off. The spheroidal lead button is then pounded into a roughly rectangular shape, and is ready for cupellation. The cupels are shallow cups of bone ash, about 1½ in. in height, 2¼ in. in width and ⅜ in. in depth. They are made by hammering in a mould, a hammer and piston being used to drive the material down into the cavity of the mould and compact it. The cupel is first heated in a muffle and the rectangular button is placed in it. It at once melts and begins to oxidize. As fast as the oxide of lead is formed, it melts and is absorbed by the porous bone ash of the cupel, as water is absorbed by a sponge. This operation goes on until little more than the silver is left. Just at this point, as the last of the oxide of lead disappears, a sudden flash of rainbow colors passes across the surface of the button, the "brightening" indicating the expulsion of the last of the lead. The silver button is now allowed to cool, is removed by a pair of pincers from the cupel, and when cleaned and brushed free of the bone ash is weighed on an exceedingly sensitive balance. Each milligramme of weight represents an ounce or definite portion of an ounce per ton of ore, if assay tons have been used. The balance used for this weighing is one of the most sensitive made, and can indicate the twentieth of a milligramme readily. Should the ore contain gold, this is determined by "parting." The button is fused with one or two times its weight of pure silver. It is then rolled out into a thin sheet, and is treated with nitric acid. This dissolves the silver and leaves behind the gold and any platinum or similar metal which the ore may contain. This residue is weighed and is reported as gold. The weights used from the gramme upward, are usually made of brass, of the shape shown. From 500 milligrammes down to 10 milligrammes they are often made of platinum; the smaller weights are of aluminum, the fractions of a milligramme being made of wire bent so that the number of sides in each bent wires indicates the number of tenths of a milligramme which it represents. There are, of course, many refinements and modifications in the process which it is not necessary to summarize here. The assayer acquires by practice so good a knowledge of ores that he can properly proportion his charge from the appearance of the ore alone. A large number of assays can be kept going at once, the scorifiers and cupels being marked with numbers designating the sample for assaying which it is used.

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

July.

MEAT.—Beef, lamb, mutton, ham, kidneys, liver, sausage, veal.

GAME AND POULTRY.—Pigeon, chicken, duck.

FISH.—Anchovy, bass, bluefish, blackfish, cod, eels, clams, flounder, haddock, halibut, herring, lobsters, mackerel, mussels, perch, porgie, prawn, salmon, shad, turtle, trout, sturgeon, whiting, weak-fish.

VEGETABLES. — Beans, cucumbers, carrots, cauliflower, egg-plant, lettuce, onions, parsley, parsnips, potatoes, shallots, spinach, turnips, radish, rhubarb, corn, beets.

FRUITS.—Cherries, strawberries, raspberries, huckleberries, melons, gooseberries, blaekberries, peaches, pears, tamarinds bananas, pineapples.

PRACTICAL RECIPES.

CARROT SOUP.—Scrape and cut into small pieces six fine large carrots. Cook them in two quarts stock until they may be mashed through a sieve. After the carrots have been mashed, return the mass to the soup and boil for a short time, season with salt, cayenne pepper and a little white sugar.

BREAD SAUCE FOR GAME AND FOWL. — Cut a French roll in slices and put it in a saucepan with a whole onion, a few whole peppers, a little salt and enough milk to cover them. Let it simmer gently until the bread soaks up the milk then add a little thick cream, or some milk and a lump of butter, take out the onion and rub the sauce through a sieve and serve.

MINT SAUCE.—Chop some nice fresh mint very fine, mix it with a very little water, some vinegar and sugar.

HORSERADISH SAUCE.—Chop up some parsley, a small young onion, a few capers and one or two anchovies; to these add a spoonful of horseradish scraped fine, a tablespoonful of oil, a little vinegar, pepper and salt.

BROWN COLORING FOR SOUPS AND SAUCES.—Put a quarter of a pound of fine sugar into an earthen pipkin and set it over the fire to melt. When melted it will be frothy, then put it farther from the fire until it is brown, stirring all the time. Add when brown a cup of red wine, a little salt, and lemon juice, a little ground cloves and mace, a grating of young onion and boil gently for ten minutes, pour into a basin till cold, then bottle for use.

RICE BALLS.—Cook two cups of rice until it is soft, then pack it into teacups that have been wet with cold water and set it on the ice to get very cold. When wanted for desert invert the cups into saucers and the rice will come out whole. Whip some cream until it is moderately thick, sweeten it and flavor with vanilla; pile it about the balls on the saucers and serve—or instead of cream serve custard flavored with vanilla with the rice.

LEMON CREAM CUSTARD.—Grate the peel and squeeze the juice of a large fresh lemon and add two and a half cups of water; pour into a porcelain kettle and set on the fire. Rub two tablespoonfuls of corn starch smooth in a little water, put it in a dish and pour slowly over it the heated lemon water, stirring all the time; add the beaten yolks of three eggs and set it back on the stove to thicken like custard; sweeten to taste. Remove from the fire, add the well-beaten whites of the eggs, pour into custard cups and let it get very cold before serving.

SAUCES AND DIGESTION.

Written for the AMERICAN ANALYST by W. E. S. Fales, U. S. Vice Consul, at Amoy, China.

Were man a mere animal, he could probably lead a very healthy and hearty life upon raw meat and fish, fruits, nuts and berries. Frequently he tries the same diet under the pretext of health-reform, but always comes to grief. Man civilized requires a varied regimen. He needs cooked food, and, what is too often neglected by well-meaning and otherwise intelligent persons, he requires the additional element of something which appeals to the palate on the one hand and facilitates digestion on the other. Only a high civilization produces a genuine sauce. To find the oldest sauces we need take only the oldest civilizations. Curry represents the Sanskrit, Soy the Chinese, Chutney the Sinhalese or the Persians, and Tabasco the Aztec. Nature seems to give us a hint at the origin of the use of these condiments. They grow in tropical or semi-tropical lands, seldom in temperate climes; the hotter the land, the more pungent and aromatic the spice. Black pepper from the Celebes and the small chili from equatorial South America are types in this regard. The reason is self-apparent. In the north man eats to keep warm; in the tropics no such necessity prevails. The blubber of the Esquimo, the tallow and train-oil of the Finn and Samoyed are fuel whose chief function is to heat the body. As you go southward the foods lose this quality by degrees and begin to show other attributes. Pork and fat beef, yellow corn and oatmeal become the staples. Then come the lands of the cereals and the heavy esculents. Last are the tropics, where fish, bird and beast are thin and where the fruits and vegetables are light and aqueous. At one extreme the principal purpose of food is sustaining animal warmth; locomotion, repair and relaxation are but secondary. At the other it is the very reverse. At one end life is one long struggle for sustenance; at the other nature supplies every want. On the other hand, the heat of the tropics produces lassitude and loss of appetite. Unless something intervened the human being would degenerate. Here nature steps in and to a varied food-supply adds any number of delicious and appetizing flowers, fruits, berries, leaves, barks and roots. The tropical man must have noticed this at a very early period and utilized it for both his pleasure and benefit. The Hakkas and Sanfats of Formosa, two savage tribes, use the soy-bean, the bay-leaf and the cinnamon bark in their cooking; the Malays the pepper, pumelo-leaf and allspice; the Kiche Indians, of Central America, the chili, and the Creeks and Seminoles the sassafras and wintergreen, which survive to-day in the famous gumbo filê of New Orleans. The development of civilization in these lands has increased the use of what may well be called food-accessories, and has also increased their variety and excellence. In India there are more than one hundred recognized kinds of curry; in southern Asia, one hundred and fifty of chutney, and in China at least fifty of soy, se-you or se-yow, as it is variously called. The principle underlying these preparations is one and the same. The palate and the nostrils are pleased, the appetite is excited and the digestion is strengthened. The Chinese go a step further, and in their soy endeavor to tone up the liver and to improve the condition of the bowels. In every case the evil effects of a high temperature are remedied and the body properly nourished. With invalids and convalescents the case is still stronger. The feeble organization requires food, but at the same time resents it. Here the condiment or sauce awakens appetite and strengthens assimilation. A drop of soy or a dash of curry converts what before was tasteless or repugnant into a delicious dish. The physicians and philosophers of the East have long appreciated these truths and preach and practice them universally. The physician goes so far as to be a special chef de cuisine, and in his treatment prescribes the soy and sauces which will conduce to his patient's rapid recovery. To-day the conditions of life in the West are practically the same as those in the East. Civilization, with its well-built houses, improved modes of heating not only homes, but offices, cars and boats, sensible clothing and food from every part of the earth, has made the daily existence of the citizen of Edinburgh, London and Paris, New York, Philadelphia and Chicago almost identical with that of Canton or Calcutta. The conditions are the same and the wants created by those conditions are necessarily the same. In the West, as in the East a good sauce is a physiologic necessity. The fact is already manifest from the innumerable army of preparations upon the market. Most of these are bad. They are carelessly and cheaply made from the poorest ingredients. They irritate the gastric system and, instead of doing good, do harm. The experience of every physician shows that they blunt the palate, injure digestion and frequently produce dyspepsia and other ills. The best are those based upon the Chinese soy. This, in essence, is a compound of the soy bean, an aromatic and delicious vegetable, salt, water and a touch of spice. In the East it replaces salt and is used upon nearly every dish. Upon soy as a basis, European manufacturers by the score have produced sauces of greater or less excellence. None are bad and some are admirable. The one where the soy idea is carried to perfection is Lea & Perrins' Worcestershire Sauce. The highest compliment that can be paid to it is the simple fact that it is the only article which displaces soy upon the tables of the mandarins and Chinese nobility. These are sybarites worthy of the days of Lucullus. What they use is the best the world affords. It is the last link in the chain of which the Amoy se-you, the Canton se-yow, the Indian Soy and the old English Soy of the first part of the century are the predecessors. It has a delicious flavor when used in small quantities, and is so rich and powerful that an excess will conceal faults in cooking without injury to the dish. Used as a condiment, or with water or with ice, it is a superb stomachic and appetizer. A Worcestershire Cocktail is a hundred times better than any alcoholic concoction, and is the only one a conscientious physician will recommend. It is more than an aid to the cook and does far more than merely please the palate and nostrils. It warms the stomach and increases the flow of both the gastric and the pancreatic juice. It acts benignantly so far as choleic acid is concerned and in this wise renders assimilation more rapid and complete. Above all, it does not weaken the digestive processes. A man can use it regularly a half century, and be benefitted to the very last. On the contrary, it frequently cures atonic dyspepsia, gastralgia and other assimilative ills. Taken all and all, it is the best, purest and finest sauce known to the modern world.

CITY NOISES.

HARMFUL EFFECTS OF THE CLANGING OF CHURCH BELLS.

The coming on of hot days, when invalids require open windows and persons in health are more or less irritable and nervous, has brought up again the question of the city bells. A correspondent quotes to us the remark of a lady which represented church bells as a nuisance that ought to be abated, and he feels shocked at such a sentiment. He appeals to us to visit our severest censure on this "sacrilegious" utterance, and asks us to give the history of church bells, and to say if their use is "dying out," as his friend asserts. The bell itself is older than written history. The earliest writings speak of the bell and of its various uses. Small silver and golden bells were attached to articles of raiment, giving a musical cadence to the steps of the wearer. The earliest Greek authors allude to the use of signal bells in camps and military stations. Even the ragman's bell is not a modern invention; according to Plutarch the trades people of his day rang their hand bells to attract buyers in the Athenian market. The Romans made constant use of bells in their homes, as we do now; and the hours of service in the public baths were announced by them. They were used on horses precisely as now, both to prevent accidents and to mark gala days and festive processions. The earliest record we can find of the use of bells in churches is in the account of Polydore Vergil, who says that Paulinus, Bishop of Nola, a city of Campania, was the originator of the custom about the year 400. For many years it was supposed that Pope Sabinianus, who used church bells in 604, was the first to sanction the custom; but later investigations proved their use in France as early as 550, and finally the tracing reached A. D. 400, back of which we find the bell employed for every other purpose, but not used to call worshippers to the church. The earlier church bells often contained large amounts of the precious metals, contributed by devout persons, that was put into the casting, and hence they had a very melodious sound, even the larger ones not being so offensive to the ear as those of more modern construction. They were consecrated, too, with solemn religious services, and this endeared them to the people. In the absence of clocks they gave to all within hearing the hour of service, but to the devout worshiper they had in their peal a call to devotion regarded with especial reverence. In England there was a common belief for many years that the use of bells was forbidden on houses of worship not in union with the Established Church. We had quite a controversy on this subject nearly forty years ago with a sturdy Enlishman of the John Bull type, who asserted first that a law of this character was still in force, and who, when driven from that position, then held that a statute forbidding the use of bells on chapels of dissenters and Roman Catholics had been on the books for many years, but might have been repealed. The trial which gave rise to the controversy came to an end in August, 1851,

and Lord Chief Justice Jervis, who gave the judgment described the prevailing impression as a "vulgar error," asserting that the common law gave "the right to use bells to churches of every denomination." In regard to the exercise of this right, however, he distinctly stated that no matter what was the name of the church, whether Protestant or Catholic, "the bells might undoubtedly be made use of in such a manner as to create a nuisance," and in this case they were liable to legal restraint. Public opinion is divided concerning the use of church bells in the city. It is urged that where time pieces are so abundant they are useless as indicating the hour of service. We do not think that this is quite true, as many will sit in full view of a clock without being reminded of the flight of time. To such the stroke of the bell is almost essential as a call to the house of worship. The burden of the complaints that have come to us rest on the ringing of bells at an early our in the morning, while most people have their night's sleep yet unfinished. In some neighborhoods there are sharp peals at or before six o'clock, and they are repeated as the successive hours of service are reached. We have no doubt that to many they are a real nuisance, the continuance of which can hardly be justified on any reasonable grounds The bells at later hours, beginning at ten and repeated for afternoon and evening service and for the session of the Sunday school, are by no means so annoying, since few people in good health are then in need of sleep. Even these later peals, however, will have a most painful effect on those who are languishing on beds of pain. We have sat by the side of the sick, to whom every stroke of the bell was a messenger of pain. The quickened pulse, the increased temperature of the body, the quivering of the excited nerves, all told of the injury to the patient, and frequently no alleviating medicines and no interval of rest would bring the invalid back to the recedent condition until long after the day with its church-going bells was over. It is a serious question whether, on the whole, the church bells do not inflict more harm than can be offset by the compensating good. At any rate, if not abolished, the annoyance might be abated by diminishing in a large degree the amount of the service. A few signal strokes might be borne with more patience than ten minutes of ringing succeeded by ten minutes of tolling, which is now the common infliction. The church bells are not the only offenders, but in the city most of the factories have substituted the steam whistle for the metallic peal. This is not a gain to the sufferers except that the shriek of the steam fiend is not as long continued as the ringing of the bell. We think these should be abated in all populous places. The owner of a factory has no right to send that fearful sound into a thousand homes for the sake of giving notice to the persons he employs that the hour has come for their assembling. We know many to whom these morning calls are a constant terror all the year round. They cannot accustom themselves to the repetition. Some are startled out of their morning sleep as by a sudden stroke and do not recover for hours, but most who dread the sound will waken before it is heard and lie in dread until it is over. The ordinary noises of the street, the outcries of itinerant vendors, the roll and jar of carts, the awful hand-organs, all make a confusion of sounds difficult for nervous people to bear; but the early bells and whistles ought to be suppressed at once and forever.—*Journal of Commerce.*

CORRECT DIAGNOSIS.—"Mornin', mum; is the docthor in?"

"I'm the doctor. What do you want?"

"Sure an' if yez wor the docthor ye'd know what waz the matther wid 'me widout the askin'."

"Yes, I can tell. You are afflicted with chronic impecuniosity and peripateticism, resulting from congenital lassitude, aggravated by persistent alcoholization."

"Great hivens! An' how long do yez give me to live?"

CASTING A STATUE.

THE CONSTRUCTION OF A STATUE IN A SINGLE PIECE OF METAL.

On June 25th Mr. J. Q. A. Ward's colossal bronze statue of the late Henry Ward Beecher was unveiled in front of the City Hall in Brooklyn. The following description of the process of its construction is condensed from the *Scientific American.* The statue is remarkable as being cast practically in a single piece, the head being of one piece with the body. Originally metallic statues were made in small pieces, and were united by rivets or soldering. Some were cast solid. The present practice is to cast them hollow, and as thin as possible. This secures rapid cooling and tends to prevent any separation from the constituents of the alloy. It also economizes in metal. The first step in making a statue is the production of the plaster model. This is supplied by the artist, and it comes from his studio of the exact size required for the final statue. The original studies in the case of colossal statues such as the present may be very small, but before the artist is done with his work, the full sized model is produced. In the present case the statue was to be about nine feet high. The area of the flask in which the mould was to be made was seven feet four inches wide by thirteen feet six inches long. The model was established upon the lower section of the flask and the work of building up the mould began. The sand used is mined in France. It possesses to a high degree the property of consolidating, yet is very porous. A famous bed of the material is at Fontenay-aux-Roses, about 16 miles from Paris. This is compacted by wooden mallets and hand rammers of different shapes. As the artist produces his statue without any reference to its capacity for "drawing" from the mould, the bronze founder has to adopt his work to the most exacting conditions of undercutting and complicated outlines. The mould is, therefore, built up in very numerous sections, some of them extremely small. An exact count was not kept, but in the present statue between one thousand and fifteen hundred pieces were used in the mould. The statue is eventually completely embedded in clay. The mould has now to be opened up, the edifice of over a thousand sections is carefully taken down and the model is lifted from its resting place upon the lowest flask section. The mould is next rebuilt, the inner surface receiving a coating of foundry facing, and the interior is rammed full of clay to form the core. This core need not be solid. Some spaces may be left in it for the gases to collect in. Thus the mould is a second time complete and intact, but is filled with a clay figure instead of a plaster one. The mould is a second time dismantled and the core taken in hand. From its entire surface a layer of clay is removed, to average, as nearly as possible, one quarter of an inch in depth. This delicate operation provides the space for the metal to occupy in the casting process. This core thus reduced in size is replaced upon the flask and is properly supported. The mould is a second time built up, surrounding in this case the reduced core. A number of channels or gates are worked in the mould to allow the metal to run through to different parts of the figure. These resemble somewhat the trunk and branches of a tree. They start from a comparatively large section near the pouring reservoir, and fork and diminish repeatedly, reaching the space between core and mould in many places. When all is perfectly dry, and the flask filled with sand so as to hold all the pieces in place, the operation of casting is proceeded with. In the present case seventeen weeks were required for the moulding. The process of casting a bronze statue is executed either by surface or bottom casting. In the latter method a reservoir is arranged over the gates, which reservoir is large enough to hold all or a large portion of the metal. It has holes in its bottom corresponding exactly to the gates in the mould. These holes are plugged. The metal is poured into the reservoir, and by withdrawing the plugs the metal runs down into the space in the mould. The Beecher statue was cast by surface pouring. The metal held in crucibles was poured directly into the gates. This enabled a constant watch to be kept upon its fluidity and general nature as far as shown in its fusion. A man, as the metal was poured, kept scraping back all scoria, slag, and oxide from its surface. The adoption of one or the other system of pouring the metal rests, as a matter of preference, with the individual founder. For the Beecher statue 7,400 pounds of metal were melted repeatedly. The fourth fusion was the one used. Eleven minutes were occupied in the casting, and the the finished statue weighed 3,600 pounds. The rest of the metal represented the contents of the gates, waste, etc. The alloy was composed of copper 90 parts, tin 10 parts, zinc 3 parts.

ADULTERATED ESSENCES.

OIL OF LEMON MADE OF TURPENTINE.

There is reason to believe that a great many cheap and nasty essences are finding their way into this country this season. We suppose that the keen competition which in many places exists amongst mineral water makers, together with an unfortunate tendency in certain quarters to keep up the old-fashioned profits at the expense of quality, has created a demand for cheap essences. Now there is cheapness and cheapness; but the kind of cheapness which we would warn our subscribers against is that which is produced either by dilution or by the addition of foreign substances, which may or may not be harmful, but which certainly have no business to be employed. It may come as a surprise to some that essential oil of lemon is being adulterated with oil of turpentine! It has been met with in our Analytical Department very skilfully blended with the genuine oil of lemon. In general appearance the oil of lemon is scarcely affected by the addition of this adulterant, but an educated palate will generally detect "something wrong" without being able to suggest what that something is. Sophistication may be *suspected* by the general appearance, flavor, etc., of the essence if the buyer is experienced; but if there is any doubt it would be advisable before laying in large

ORIGINAL. No. 54.

Fruit Pinwheels.

BY MARIA PARLOA.

Mix together and rub through a sieve one pint of flour, one tablespoonful of sugar, half a teaspoonful of salt and two teaspoonfuls of Cleveland's baking powder. Into this mixture rub two generous tablespoonfuls of butter. Wet with a scant half-pint of milk. Sprinkle the board with flour, and, putting the dough upon it, roll down to a large square about half an inch thick. Spread a heaping tablespoonful of soft butter on this and then spread with a cupful of sugar and a cupful of currants. Grate a little nutmeg over all, and roll up like a jelly roll—or pinwheel style. Cut in slices about three-quarters of an inch thick and lay in well buttered pans. Do not let the slices touch each other. Bake in a very quick oven for about twelve minutes. These are nice for luncheon or tea.—(Copyright, 1891, by Cleveland Baking Powder Co.)

Use only Cleveland's baking powder, the proportions are made for that.

With Cleveland's Baking Powder cake keeps fresh; breads are fine grained; biscuit light and flaky. Try a can, Cleveland's.

stocks, and before risking the character of one's mineral water by using a raw material of doubtful purity, to submit the essence to chemical examination.—*London Mineral Water Trade Review.*

COLOR RETURNING.—In Saratoga, N. Y., a singular freak of nature has manifested itself. Mrs. Mary Francis, when she was young and also while she was in the prime of life, had very black eyes and a beautiful head of very black hair. She is about 70 years old now, in good health, and a rich widow. When she was about 50 her hair began to turn white, and in a few years the whole of it was as white as snow, and so remained until about a year ago, when it began to turn black again, and has now, without the use of any artificial means and purely as a freak of nature, almost wholly returned to its original color, and is as long and silky as when she was a young woman.

RUSSIAN COTTON.—Prince Golitzen, who has recently returned from a tour through the cotton regions of Central Asia, represents the cotton cultivation there as an industry of rapidly growing importance, and that the revenue from it is at the rate of $87.50 per acre. The establishment of ginneries is referred to as one of the peculiar features of the greatly increased cultivation of cotton, the tendency being that it will be carried to an excess, because of the present large profits derived therefrom. There is a report on the cotton industry in Asia in the possession of the State Department, Washington, from the Consulate at St. Petersburg.

25 CTS PISO'S CURE FOR CURES WHERE ALL ELSE FAILS. Best Cough Syrup. Tastes good. Use in time. Sold by druggists. CONSUMPTION 25 CTS.

Armour's

Extract of BEEF.

The best and most economical "Stock" for Soups, Etc.

One pound equals forty-five pounds of prime lean Beef.

Send to us for our book of receipts, showing use of ARMOUR'S EXTRACT in Soups and Sauces.

ARMOUR & CO., Chicago.

Fine Table Wines

From our Celebrated Orleans Vineyard.

Arpad Haraszthy & Co.

Producers of the

ECLIPSE

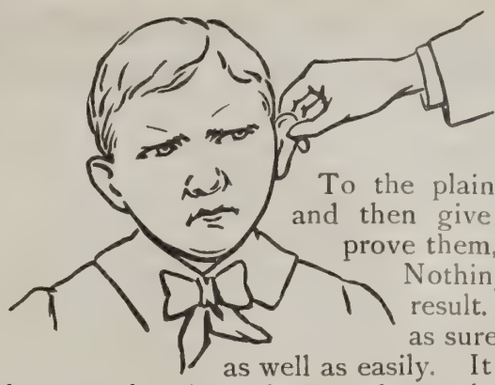
CHAMPAGNE,

530 Washington St.

SAN FRANCISCO.

GENERAL AGENCIES:

NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOSEPH R. PEEBLES SONS CO., 73 West Fourth Street.
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.



Give Ear

To the plain facts about *Pearline*, and then give *Pearline* a chance to prove them, by giving it a fair trial. Nothing else will give the same result. It washes safely, as well as surely; it cleans carefully, as well as easily. It is as cheap as soap and better. Anything that can be washed, can be washed best with *Pearline*. It lightens labor and does lightning work. As nearly as we can figure, about eight millions of women use it. Do you? You will sooner or later.

Don't Listen

To peddlers or unscrupulous grocers who offer imitations of Pearline, and say, "it is just as good as," or "the same as" Pearline. IT'S FALSE.—Pearline has no equal and is never peddled.

237 JAMES PYLE, New York.

BUSINESS NOTES.

FRUIT PRESERVES.

In nearly all the reports of State Commissioners published during the last year was contained a more or less severe criticism of the fruit preserves found in the market. Yet not in a single instance was there any mention of the goods bearing the label of Gordon & Dilworth, New York. The reason for this is obvious. This house only puts up first-class goods from the best materials and has but one brand, the best. Nothing too good for our trade, is their motto, and this is strictly lived up to by every one connected with the establishment from the proprietors, who all work in the factory, down to the humblest and youngest employee. It would be well if there were more such houses.

HARTSHORN'S SPRING SHADE ROLLERS.

Spring shade rollers are so well known now that everyone uses them and it is only a question as to whose make to buy. This is easily answered. Stewart Hartshorn is the originator and was the man who first created a demand for what is now an indispensable household article. Imitators cannot use his interior construction as his patents covers these, bnt must be content with imitating the outward appearance resulting in imperfect goods whose only claim is apparent cheapness, while in reality they are dear at any price becanse they are worthless. With Mr. Hartshorn the rule is that goods must be perfect, and with forty years experience, the best workman, well-lighted brick factories, complete machinery and ample capital, he is enabled to turn out satisfactory goods, cheaper than any other house. Improvements in construction are constantly being made, and if they stand the test of wear are added to every roller turned out. The greatest care is taken both in material and workmanship, regardless of cost, to obtain the best results. These rollers may now be found not only in every part of the United States but all over the world. The lesson is, be sure to get Hartshorn's spring rollers.

TAKE HEED!—Are the large American cities ceasing to be American? Last year, for instance, in Chicage there were 172,756 votes cast at the election, of which 88,509 were cast by naturalized citizens. This naturalized vote was divided as follows: Germans 33,002, Irish 20,253, Swedish 6,864, English 5,620, Canadian 4,402, Bohemian 3,447, Norwegian 2,998, Polish 2,774, Scotch 1,810, Austrian 1,507, Danish 1,267, Russian 960, Hollanders 911, Italian 686, Swiss 628, French 547, Hungarian 169, other foreigners 402.

WHERE HE FITTED.—"I don't know what to do with the boy," said the discouraged father. "He is industrious enough, but he isn't truthful. He'd rather lie than go fishing. I never believe a word he says unless I know it to be true beforehand." "I need a young man," said the guest, the proprietor of a baking powder factory, eagerly, "in my advertising department.—*Chicago Tribune.*

AN OPEN POINT.—It seems to be a mooted question whether or not a man can be a successful business man and a christian. There is no reason why a man cannot be both. The trouble lies in the fact that most men make a business of their Christianity. They look upon it as so much stock in trade. Christianity don't pay when you try to make it pay. Make a note of it.—*Grocers' Monthly Review.*

RELATIVE VALUES.—The value of skilled labor is most strikingly shown by the following: A bar of aluminum that is worth only $5 in its natural state is worth $12 when it is made into household utensils; after it has gone through the different processes by which it is made into jewelry, its value is increased into $150.00. Made into match cases, it would be worth $300; put into the balance wheel springs for watches, $250,000.

FOOT-BALL CASUALTIES.—The last foot-ball season in England has been noted for the casualties recorded. Among the injuries noted in the Lancet, which ended fatally are, asphyxia, caused by paralysis of the muscles of respiration, acute peritonitis, injury to the brain, rupture of the intestine, rupture of the right kidney, and abdominal injuries. Is it not time that this game should be so modified as to relieve it of the unnecessary dangers now attending it?

BUSINESS WOMEN'S DRESS.—On May 31, the Executive Board of the Women's National Council, in Indianapolis, appointed a committee to prepare a symposium on dress, to be published under the auspices of the National Council in one of the popular magazines during the coming year and report to the conference of the Executive Board of the Council of May, 1892, its idea of a business dress for women, accompanied by a model of the same. The Corresponding Secretary was authorized to correspond with Marion Harland about a stone to be placed in the monument to Mary Washington and to collect the money for the same.

BINDER TWINE.—The binder twine is used by the wheat-growers all through the Western country to bind up the wheat, and from sixty-five thousand to seventy-five thousand tons are used every year in this way. The binding is done by machinery, and it is said that McCormick, of Chicago; the Walter Wood Company, of Hoosac Falls, and other concerns turn out 200,000 binders every year. Wire was once used for binding, but pieces would get in between the mill stones and the millers naturally opposed its further use and opposed it successfully. Our wheat crops this year are so large that many thousand more tons of binder twine will be used for binding wheat than ever before.

WATCHES.

EVERY one wants a watch, and naturally a good watch that keeps accurate time, presents a handsome appearance, and is inexpensive. If such a watch can be found of American manufacture, it is an additional appeal to our patriotism. Just such a watch as this ideal THE ANALYST PUBLISHING COMPANY is enabled to offer as a Premium to its readers. Having some large advertising contracts we have been enabled to procure the movements of the manufacture of the best known American watch factories, namely, the Waltham, Elgin, Hampden and Illinois Watch Companies. These movements are adapted for both ladies' and gentlemen's watches, and are warranted by the makers. These movements have seven jewels, patent lever movement, chronometer balance, patent safety pinion, sunk hard-enameled dial, straight line visible palette, stem winders, hand set; in fact, contain all the latest improvements and can be readily cleaned or repaired by any ordinary good watchmaker. They can be regulated to run as close as any movement.



It is needless to say that to case these movements in solid gold cases would make them too expensive, yet they are cased in what are known as gold filled or stiffened "Ladd" cases, and are warranted to be 14 karat gold, made from two sheets of 14 karat gold overlaying fine composition metal, with regular jointed caps, covers and bezels, and to wear at least five years. They are not plated, nor rolled gold, but actual 14 karat gold cases, thin of course, but stiffened and strengthened by being filled with this fine composition metal. They are finished in the same manner, engine turned and engraved as solid gold watches, and wear and look just the same. No one but an expert can tell them from a solid gold watch. These watches are made both open face and hunting case style, in gentlemen's or ladies' sizes. For gentlemen we recommend plain engine-turned cases; for ladies, a handsomely engraved case.

How to Obtain One of these Watches.

These watches are not to be purchased from us at any price. Send us a club of 25 subscribers to the AMERICAN ANALYST, and $25, the regular subscription price, and one of these watches (your choice of style and size) will be immediately forwarded, post-paid and registered, to your address. You need not wait until you have your 25 subscribers all together, but forward them as you get them and they will be credited to you, and when the number is complete the watch will be sent. A subscription for two or three years will be counted as two or three subscribers.

As these watches are retailed by jewelers at not less than $25, it will be seen that we are offering a real premium with the sole object of increasing our circulation, and that by taking advantage of our offer any one can obtain a good, reliable and handsome watch without cost. As the number of these watches at this price is limited, it is advisable to take steps at once to procure a bargain.

THE ANALYST PUBLISHING CO., 19 PARK PLACE, NEW YORK.

BICYCLES

GIVEN AWAY TO BOYS AND GIRLS!

AN OPPORTUNITY OPEN TO ALL.

The Analyst Publishing Company being desirous of largely increasing their subscription list, will furnish every one with a beautiful Safety Bicycle, ABSOLUTELY FREE, in return for a few hours' canvassing.

To every boy and girl who secures 75 subscribers for the American Analyst at $75, we will give a splendid

$40.00 NONPAREIL SAFETY BICYCLE.



These bicycles are adapted in size to boys, but are strong enough to carry a man. A boy's bicycle should be a strong one. They are manufactured by the OVERMAN WHEEL CO., the makers of the celebrated VICTOR Bicycle, and have the full guarantee of the makers.

The following is a brief description of the NONPAREIL SAFETY; 26-inch wheels; ball bearing all around, including pedals; solid crescent rims; double tangent spokes; three-fourths inch tires; cranks, three throw, $4\frac{1}{4}$ to $5\frac{3}{8}$ inches; guards to both wheels; tool-bag, oiler and wrench. Finished in bright enamel, all exposed metal heavy nickel-plate on copper.

In selecting these machines as a premium, we have disregarded cheapness and selected a Bicycle which is serviceable, and the makers of which have an established reputation for building the best Bicycle that money, machinery and brains can produce. We are actually furnishing the Bicycles and Papers at less than cost, but hope by stimulating active and successful canvassing, and thus enlarging our subscription lists, to make an eventual profit. We positively guarantee these bicycles to be just as here represented. They will be shipped by express f. o. b. in New York.

Subscription orders must be made out plainly and legibly, and sent as fast as secured, addressed to

THE ANALYST PUBLISHING CO., 19 Park Place, New York.

THE ORIGINAL AND GENUINE
(WORCESTERSHIRE SAUCE).

LEA & PERRINS' SAUCE

In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—

Lea & Perrins

Beware of Imitations; see that you get Lea. & Perrins'



For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS, NEW YORK.



DETECTIVE! WE WANT A MAN IN every **locality** to act as **Private Detective** under our instructions. Send stamp for particulars.

WASHINGTON DETECTIVE AGENCY,
Box 787. Washington, Iowa.



We Can Save You—— Fifty Dollars When You Build. ✳

If you are thinking of building a home, here is an opportunity to secure one or several designs of houses which will aid you in deciding just what you want.

PLANS READY TO BUILD FROM

ONLY 25 CTS. EACH

Or Five Sets for One Dollar.

The designs given below to select from are practical and are drawn to a large scale by Geo. O. Garnsey, architect for THE NATIONAL BUILDER. Each one consists of a large, beautifully colored picture of a front elevation, including the floor plans, the details, the specifications, and carefully prepared estimates of cost, and all ready to build from. By a special premium arrangement we are enabled to sell these plans at the above extremely low price. **Specify number of Design.** Send all orders to

THE ANALYST PUBLISHING CO.,

No. 19 PARK PLACE, NEW YORK CITY.

No. 2. **Clover Cottage.** Neat, cosy and modern. Cost, $1,960.
No. 3. **6-Room Elegant Brick Residence.** Suitable for city or country; Handsome Front, Good Basement, etc. Cost, $3,500.
No. 4. **6-Room Modern Residence.** Handsome Front, with broad circular Veranda. Cost, $3,000.
No. 5. **Cheap 5-Room Genteel Cottage:** With Reception Hall, 9x12, and good Basement. Cost, $2,000.
No. 6. **8-Room Residence.** Handsome Front, neat Porch, etc. One of a series of residences much in demand. Cost, $3,000.
No. 10. **Bank and Store Fronts.** Showing different styles of Show Windows, and highly Ornamented Fronts. Two designs. Cost, $1,613 and $1,325.
No. 17. **Double City Flat Building.** Six rooms in each flat; building adapted to narrow lot. Ornamental, Romanesque Front. Cost, $10,000.
No. 19. **Queen Anne Cottage, Eight Rooms.** Good light; exhibiting good effect. Cost, $4,000.
No. 21. **Maplewood Cottage, Three Rooms.** Abundance of piazza. Very neat and convenient. Cost, $1,000.
No. 22. **Hyacinthe Cottage, Three Rooms.** Very odd and pleasing. Cost, $750.
No. 23. **Clovernook Cottage.** New in style. Cost, $750.
No. 25. **Eastlake Cottage, 8 Rooms.** Neat 2-story Frame. Cost, $1,875.
No. 26. **Rustic Stone Cottage, Six Rooms.** This design is handsome. Cost, $2,575.
No. 38. **Cheap City House, Eight Rooms.** Suited for inside lot; nicely laid out. Cost, $2,600.
No. 40. **Charming Suburban Cottage of Five Rooms.** Very roomy and convenient. Cost, $2,500.
No. 42. **Beautiful 6-Room Cottage.** Handsomely designed; all modern improvements. Cost, $3,100.
No. 49. **Neat Village Church.** Seating capacity about 600. Cost, $7,500.
No. 50. **Store and Office Building.** Brick; 2 stores and 8 offices; very handsome. Cost, $7,000.
No. 51. **Modern Suburban Residence of Nine Rooms.** Beautiful design. Cost, $2,100.
No. 57. **Rosedale Cottage, 3 Rooms.** With Bay Window, Frame. Cost, $1,000.

TABASCO PEPPER SAUCE,

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced by connoisseurs to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY'S SON,

NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

WOMANKIND.

Published Weekly, Only $1.00 per Year.

There is only one woman's general newspaper, viz.: WOMANKIND. This is a consolidation of Woman and Home, a monthly magazine of high grade, published heretofore at Philadelphia and New York, and the Woman's News. It is published weekly, in attractive form and is the best publication of its kind. It should be in every home. Its many interesting features are enjoyed alike by old and young. Every member of the household can read it with interest and profit.

SPECIAL OFFERS FOR INTRODUCTION.

We offer to strictly new subscribers, WOMANKIND for six months and a copy of **Black Beauty,** free by mail, for only **50** cents; or, a 6 month's subscription and a **Dollar Cook Book,** free by mail for **75** cents; or, a 6 month's subscription and the **$1.00 Peerless Atlas of the World** for **$1.00.** 3 months on trial for **20** cents. Send for sample copy.

THE HOSTERMAN PUBLISHING COMPANY,
SPRINGFIELD, OHIO.

HARTSHORN'S SELF-ACTING SHADE ROLLERS

NOTICE SCRIPT NAME OF Stewart Hartshorn ON LABEL, AND GET THE GENUINE HARTSHORN



A HIGH-GRADE PIANO

AT A VERY MODERATE PRICE.

NEW DESIGNS. FANCY WOODS.

Terms Easy. + Monthly Instalments.

TWO, THREE AND FOUR PEDALS.

Catalogues, Prices, Terms, Etc., sent to any address.

EVERY PIANO WARRANTED 5 YEARS.

(Mention this Paper.)

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

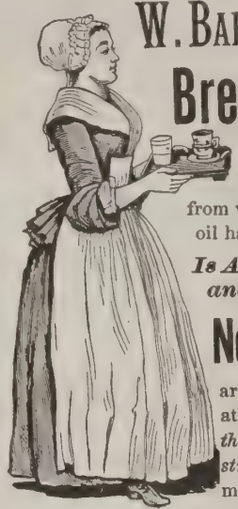
It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,

HOWARD STREET, BOSTON, MASS.

GOLD MEDAL, PARIS 1878.



W. BAKER & Co.'s Breakfast Cocoa

from which the excess of oil has been removed,

Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

"BILLET"

are

Carefully Selected French Sardines,

Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS.

BROMO SODA.

Useful in Nervous Headache, Sleeplessness, Excessive Study, Over Brainwork, Nervous Debility, Mania, Etc.

DOSE—A heaping teaspoonful in half a glass of water, to be repeated once after an interval of thirty minutes, if necessary. Each teaspoonful contains 30 grs. BROMIDE SODIUM and 1 gr. CAFFEIN.



SUPPLIED BY ALL DRUGGISTS

Ask for (Bromo-Soda, Warner & Co.) and take no other "Bromo."

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,
184 Greenwich St., N. Y.

HAMMOND'S
CELEBRATED
Calumet Oleomargarine

Strictly pure, cheap and healthful.
Ask your grocer for it.
Put up in packages of all sizes, also prints and rolls.

C. H. HAMMOND CO.,
607 to 615 THE ROOKERY,
CHICAGO.

Also offices at Boston, South Omaha, Neb., and Hammond, Ind.

BLAIR'S PILLS.



Great English Remedy for GOUT, RHEUMATISM and KIDNEY COMPLAINTS.
SURE, PROMPT and EFFECTIVE.
Large Box, 34; Small, 14 Pills.
At all Druggists, and
224 WILLIAM STREET, NEW YORK.

Pure LAGER BEER,
"IMPERIAL" and "CULMBACHER"
Brewed & Bottled
SPECIALLY FOR
HOTELS, CLUBS
AND
PRIVATE FAMILIES
BY
Beadleston & Woerz
291 W. 10th St. New York.
Orders by Postal Card promptly attended to.

SWIFT'S
CHOICE
Chicago Dressed Beef
AND
MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,
UNION STOCK YARDS,
CHICAGO, ILLS.

TEAS
REVOLUTION IN PRICES.
Direct from TEA GROWERS to TEA POT.
Finest Teas Imported.

Send in your orders at once. On $20 00 Tea and Baking Powder orders, we will allow you a **Complimentary,** in any kind of Tea you may select, equal to 25 per cent. and **Pay all Express Charges.** This is an unprecedented offer. Remember we are the **"Old Reliable,"** THE GREAT AMERICAN TEA COMPANY Established 1861. No discounts, No Premiums, No Panels.

PRICES OF TEAS & BAKING POWDER.

OOLONG,	30, 35, 40, 50, 60, best 65 cts. per lb.
MIXED,	30, 35, 40, 50, 60, best 65 " "
JAPAN,	35, 40, 50, 60, 70, 80, best 90 " "
ENGLISH BREAKFAST,	35, 40, 50, 60, 70, 80, best 90 " "
YOUNG HYSON,	35, 40, 50, 60, 70, 80, best 90 " "
IMPERIAL,	35, 40, 50, 60, 70, 80, best 90 " "
GUNPOWDER,	50, 60, 70, 80, 90, best 1.00 "
BASKET FIRED JAPAN,	50, 60, 70, 80, best 90 " "
CONGOU ENGLISH BREAKFAST,	50, 70, best 90 " "
SOUCHONG "	" 50, 70, best 90 " "
FORMOSA OOLONG,	50, best 65 " "
ORANGE PEKOE,	50, best 70 " "
ASSAM,	50, best 70 " "
BAKING POWDER, in One Pound Tin Cans,	45 cts. per can.
BAKING POWDER, in Half-pound Tin Cans,	25 " "

All goods warranted to give perfect satisfaction, or they can be returned and exchanged or money refunded, and all expenses paid by us.

THE GREAT AMERICAN TEA COMPANY,
— IMPORTERS, —
31 & 33 Vesey St., P. O. Box 289. New York.
N. B.—Only inducements are *Best Goods* at *Lowest Prices.*

ESTABLISHED IN LONDON, 1831.
DEAN'S
PATENT
Ardenter Mustard



W. G. DEAN & SON,
361 & 363 WASHINGTON STREET; 84, 86, & 88 NORTH MOORE STREET, N.Y.

We can save you Fifty Dollars when you Build. See



A complete set of Plans to build from, simply state about price of dwelling desired. 25 cts. in stamps. Our book "Beautiful Homes." 25 cts. Our monthly book "The National Builder," 25 cts. Address
The National Builder, Adams Exp. Bldg., Chicago, Ill.

Subscriptions $1 per year. Now is the time to subscribe.

PUBLICATIONS OF THE
ANALYST PUBLISHING CO.

THE AMERICAN ANALYST.
Weekly. Every Thursday. $1 per year.

THE ROOFER, TINNER AND SHEET-IRON WORKER.
Monthly. 15th each month, $1 per year.

THE LEATHER MANUFACTURER.
Monthly. 1st each month. $3 per year.

Reliable agents and representatives wanted everywhere on liberal terms. Address
ANALYST PUBLISHING CO.
19 PARK PLACE, NEW YORK.

INSTRUCTIONS TO SUBSCRIBERS.

The **Names of all Subscribers** are registered as soon as received, and paper is always promptly forwarded.

Postage.—The postage to all parts of the United States and Canada is paid by the publisher.

Remittances of small sums may be made with comparative safety in ordinary letters. Sums of one dollar or more must be sent by registered letter or P. O. money order, otherwise we cannot be responsible for same. Silver must not be sent in a letter.

Postage Stamps will be received for the fractional part of a dollar, and in any amount when it is impossible for patrons to procure bills, but you must send one or two-cent stamps only.

SUBSCRIPTIONS.—The AMERICAN ANALYST will be sent one year to any subscriber for ONE DOLLAR. New subscriptions can begin at any time.

We Stop the Paper at the expiration of the time paid for unless a renewal of subscription is received. Those whose subscriptions have expired must not expect to continue to receive the paper unless they send the money to pay for it.

Change of Address.—Subscribers wishing their addresses changed must invariably give their former as well as new address.

Missing Numbers.—It occasionally happens that numbers of our paper sent to subscribers are lost or stolen in the mails. In case you do not receive any number when due, write us a postal card and we will cheerfully forward a duplicate of the missing number.

Most Important of All.—In every letter that you write us, never fail to give your full address, plainly written—name, post-office, County and State.

Address all letters to

THE ANALYST PUBLISHING CO.,
19 Park Place, New York.

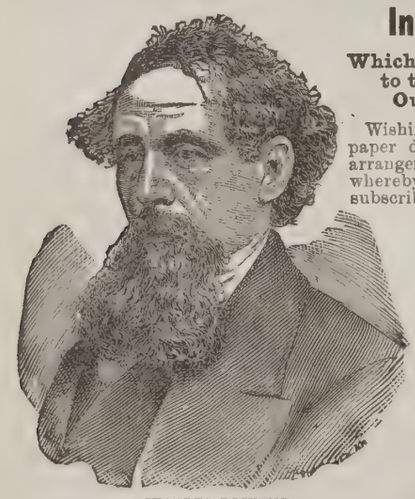
GRAND PREMIUM OFFER!

A SET OF THE

WORKS OF CHARLES DICKENS,

In Twelve Large Volumes,

Which we Offer with a Year's Subscription to this Paper for a Trifle More than Our Regular Subscription Price.



CHARLES DICKENS.

Wishing to largely increase the circulation of this paper during the next six months, we have made arrangements with a New York publishing house whereby we are enabled to offer as a premium to our subscribers a **Set of the Works of Charles Dickens, in Twelve Large and Handsome Volumes,** with a year's subscription to this paper, for a trifle more than our regular subscription price. Our great offer to subscribers eclipses any ever heretofore made. Charles Dickens was the greatest novelist who ever lived. No author before or since his time has won the fame that he achieved, and his works are even more popular to-day than during his lifetime. They abound in wit, humor, pathos, masterly delineation of character, vivid descriptions of places and incidents, thrilling and skillfully wrought plots. Each book is intensely interesting. No home should be without a set of these great and remarkable works. Not to have read them is to be far behind the age in which we live. The set of Dickens' works which we offer as a premium to our subscribers is handsomely printed from entirely new plates, with new type. The twelve volumes contain the following world-famous works, each one of which is published *complete, unchanged, and absolutely unabridged:*

DAVID COPPERFIELD,
MARTIN CHUZZLEWIT,
NICHOLAS NICKELBY,
DOMBEY AND SON,
BLEAK HOUSE,
LITTLE DORRIT,
OUR MUTUAL FRIEND,
PICKWICK PAPERS,
BARNABY RUDGE AND CHRISTMAS STORIES,
OLIVER TWIST AND GREAT EXPECTATIONS,
THE OLD CURIOSITY SHOP AND THE UNCOMMERCIAL TRAVELER,
A TALE OF TWO CITIES, HARD TIMES AND THE MYSTERY OF EDWIN DROOD.

The above are without question the most famous novels that were ever written. For a quarter of a century they have been celebrated in every nook and corner of the civilized world. Yet there are thousands of homes in America not yet supplied with a set of Dickens, the usual high cost of the books preventing people in moderate circumstances from enjoying this luxury. But now, owing to the use of modern improved printing, folding and stitching machinery, the extremely low price of white paper, and the great competition in the book trade, we are enabled to offer to our subscribers and readers a set of Dickens' works at a price which all can afford to pay. Every home in the land may now be supplied with a set of the great author's works.

GLENN'S SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,

C. N. CRITTENTON,
115 FULTON STREET,
NEW YORK.

Be progressive and keep abreast of the times. Avoid dyspepsia by using **Lard Compound** and **Cottolene,** a substitute for lard.

The highest medical authorities pronounce them healthful; and expert cooks commend them.

Our **Clairette** brand of cotton oil soap is the purest and best laundry soap in the market; as pleasant to the hands as genuine castile.

N. K. FAIRBANK & CO.,
CHICAGO AND ST. LOUIS.

OUR GREAT OFFER

TO SUBSCRIBERS

TO THE

AMERICAN ANALYST.

We will send the **ENTIRE SET OF DICKENS' WORKS,** *in* **TWELVE VOLUMES,** *as here described, all postage prepaid by ourselves, also* **THE AMERICAN ANALYST** *for* **ONE YEAR,** *upon receipt of* **$1.50,** *which is only* **50** *cents more than the regular subscription price of this paper.* Our readers, therefore, practically get a set of Dickens' works in twelve volumes for only **50** cents. This is the grandest premium ever offered. Up to this time a set of Dickens' works has usually been $10.00 or more. Tell all your friends that they can get a set of Dickens' works in twelve volumes, with a year's subscription to **THE AMERICAN ANALYST** for only **$1.50.** Subscribe now and get this great premium. If your subscription has not yet expired, it will make no difference, for it will be extended one year from date of expiration. We will also give a set of Dickens', as above, free and post-paid, to any one sending us a club of three yearly subscribers.

ADDRESS:

THE ANALYST PUBLISHING CO.
No. 19 PARK PLACE,
NEW YORK.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 29. NEW YORK, THURSDAY, JULY 16, 1891. WHOLE No. 229

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - - $1 per year.
Single Copies, - - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.

Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.

Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,

H. LASSING, M. D., } *Editors.*
T. P. McELRATH, }

No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

Adulteration in New Hampshire 340
Comely and Plump 338
Domestic Dietetics 341
Editorials 337
New Probabilities ; An Albany Kicker ; Protective Abstinence ; Coffee Frauds in France.
Electrical Power 340
Fruit Diet 342
Intellect and Diet 342
Meteorites 340
National Contrasts 341
Speed of Electricity 339

NEW PROBABILITIES.

On the first of July, as our readers are aware, the Government Weather Bureau passed out of the hands of the Army Signal Service, and became an adjunct of the civil service under the Department of Agriculture, in charge of Prof. Mark W. Harrington, professor of astronomy at Ann Arbor. There is still a good deal of speculation, in army circles especially, as to the wisdom of this change. So long as the Bureau was attached to the Signal Corps, there was at least the advantage of military discipline, which extended even over the civil assistants ; and this was no small consideration in view of the accuracy with which every observation has to be taken and timed and recorded. Now that the "probabilities" and "indications" have become so familiar a factor in the day-life and thought of the people, it seems odd to note the comparative recency of their origin. Since the early forties a good deal of interest has been taken in barometric, thermometric, and rain-gauge observations, but these were at first irregular and unsystematic. The instruments used even by professional observers were rarely perfect, and, there being no uniformity of plan among the several observers, no valuable scientific results were obtained. Lieut. Maury, U. S. N., is credited with being the first to recommend international co-operation, and in 1852 Sir John Burgoyne, British Inspector-General of Fortifications, established a system of meteorological observations on land, to be conducted by the Royal Engineers. A correspondence took place between the British Government and ours, with a view to having all the land and sea observations in either country follow certain uniform lines, so that comparisons between them would be of some real value. The upshot was that all the leading maritime nations were invited to send representatives to a conference held at Brussels the next year. The conference decided that it would be impracticable to establish uniformity of scales and instruments, but that the most that could be done would be to secure accuracy with each of the different kinds. The impulse given to popular interest in the subject by all this discussion, however, resulted in the creation of a meteorological department by the English Board of Trade, which has been followed by the gradual development of weather bureaus in all the different countries.

AN ALBANY KICKER.

We trust that we shall not lay ourselves open to further critical demolishment at the hands of our erudite contemporary, the *New England Grocer*, by quoting the following editorial from the *Merchants' Mail*, of Albany, N. Y., regarding the "Pure Food" movement :

Some manufacturers in New York City have gotten together and formed an association to be known as the "Food Manufacturers' Association of the United States." The object sought to be gained is to manufacture pure and wholesome food. Quite a praiseworthy object, indeed. But every one knows that there is a great deal of bosh and nonsense about this whole business. The dairy commissioners' reports of the different States show the number of food articles that are adulterated, and many manufacturers who would go in such an organization are the ones who put out the worst kind of goods. How many of the present members of this new organization would be in favor of a law requiring the ingredients to be printed upon the label? Suggest that once, and you would immediately hear a howl from these manufacturers that such a law would compel the making public of the *formula*. Nothing of the sort. Now, this association, in connection with the Grocers' Union of New York, propose giving an exhibition, which we take to mean that nothing shall be admitted unless the same is absolutely pure. In such a case there will be a daisy old exhibit. How does the manufacturer get rid of his adulterated and poor goods? Through the retailers; and easily one-half the grocers of this State stand ready to take such goods and palm them off on the unsuspecting and innocent public.

PROTECTIVE ABSTINENCE.

According to a writer in the *Nation* the agency of railroad companies in promoting temperance is not generally appreciated. They employ in this country 689,912 persons, not counting those who mine the coal and iron, make the rails or locomotives, or build the cars and carriages used by the road. The freight and passenger traffic of the country is practically controlled by 600 of these corporations, and of these 600 no fewer than 375 prohibit the use of intoxicating liquors by their employes, among the number being most of the largest companies. The Brotherhood of Locomotive Engineers uses its influence in the same direction. "Whenever a member of the order is known to be dissipated," says Mr. Arthur, long the head of the organization, "we not only expel or suspend him, but notify his employers," and during the last year 375 members were expelled for this cause. This is only one illustration of the way in which practical business considerations are operating to promote the spread of temperance. It is purely a matter of business with the railroad companies. They simply cannot afford to employ a man who is liable any day to get drunk and precipitate some terrible disaster The average man thus comes to see that it is "money in his pocket," in more senses than one, if he keeps out of the saloon ; and the moral is not lost upon him."

COFFEE FRAUDS IN FRANCE.

We read in our French exchanges that a proposed coffee adulteration bill is exciting much interest among the proprietors of cafés in that nation. It seems to have been supposed, writes a correspondent, "that if coffee is bought in the grain, and ground up at home, the consumer is sure of having it pure. This, it seems, is a mistake. The consumer is not sure of having his coffee pure, even when he buys it in the grain. The reason of this is that there is a great deal of artificial coffee manufactured, and manufactured so that, so far as appearance is concerned, it is impossible to tell it from real coffee. There is, indeed, some slight difference about the little crack in the grain, but this is difficult to recognize except by an expert. But if the grain be burst by pressing it between the fingers, there will be a small quantity of a blackish-looking powder, and if this is tasted it will be found to be slightly bitter, but otherwise very insipid. It would be impossible to make coffee with this material, for the blackish-looking powder is nothing but flour and sulphate of iron. This substitute could not be sold for coffee by itself, of course ; but when it is mixed with real coffee it is very easily passed for the pure article. Of course, the mixture makes very bad coffee, and is in many cases injurious to the health." With a view to altering this state of things, a Delegate has framed a bill to bring before the Chamber, which forbids the manufacture, the exposition for sale, the importation or ex-

portation of any product which by its form, its color, and its aspect generally, is susceptible of being taken for, or bought as, coffee in grain, either green or roasted. Article II. of the new bill decrees that the offenders against Article I. will be liable to fines of from 50f. to 3,000f., and they will be considered as having acted in knowledge of the fraud if they do not declare the names of the seller or the forwarder. Article III. says whosoever shall sell, or try to sell, as real coffee, green or roasted, any product which is not coffee, will be punished by a term of imprisonment of three months at the least, and of one year at the most, together with a fine of 50f. at the least. Article IV. decrees that the aforesaid fines and penalties shall be doubled if the adulteration has been found to be hurtful to the health, or if it has been fraudulently mixed with real coffee. All these penalties to act independently of the Articles in the Penal Code which deal with the various kinds of frauds. In a manufactory of this artificial coffee as many as 40 or 50 kilogrammes are turned out in a day, that is, between 80 and 100 pounds. The materials of which these goods are composed are about 15 kilos. chicory, 36 kilos. flour, and 500 grammes of sulphate of iron. The bright appearance is given to the grain by means of a special oil.

COMELY AND PLUMP.

ADVICE TO WOMEN SEEKING TO CULTIVATE ADIPOSE.

(*Celia Logan in the N. Y. Press.*)

In youth—"the season made for joy," as Sheridan phrases it—a girl should be plump enough to be pleasing to the eye. Her jaw and cheek bones should have sufficient flesh upon them to give a soft, rounded contour to her face. Her neck, like a column, should have every chink covered and rest upon firm shoulders, well filled in to hide the clavicles. The chest should rise into a gently swelling bust and thence slope evenly downward to the round, supple waist. From the shapely arm no sharp elbow joint should protrude, but should taper down to a bone hidden wrist, supporting a small dimpled hand, with fingers prettily curved. Alas! not to every daughter of Eve is given the exact proportion of adipose tissue indispensable to a faultless form. Many of our girls are too thin, and, knowing it, resort to various specious artifices of dress to conceal their skinniness, and succeed fairly well as far as the body is concerned, but there are points of the human frame which defy art to soften or change them. When art fails them our women, enlightened and progressive, call upon science to aid them, and I, an humble exponent of one small, but not unimportant branch of it, have been asked if, knowing how to teach the fat girl to become slender, I cannot instruct the too slim girl how to coax adipose tissue enough upon her bones to meet the requirements of beauty. Unhesitatingly I reply that it can be done, always provided that the person is healthy, that the thinness arises from no disease such as atrophy of the tissues of the body, a malady which mainly supplies museums with their "living skeletons." This wasting disease is caused by want of healthy digestion and assimilation, which gradually deranges the blood glands so that they cease to form blood in quantity sufficient to nourish the body. Corpulence and fattening always originate in the way people live and eat. This was proved by a Dr. Chambers, surgeon to the Queen of England. He delivered a series of lectures upon corpulence in 1850, and until 1863, when Banting's "Letter" appeared, Chambers was the highest British authority upon this subject. He related several experiments which had been made with a view to ascertaining the exact relation of diet to obesity, and cited the case of a thin young girl who was fed upon chestnuts and allowed to drink a great deal of champagne. In a short time she became enormously fat, but returned to her natural shape when permitted to resume a rational diet. Liebig was of the opinion, based upon his experiments, that fat is formed directly from the starches and sugar eaten, and upon his authority it is stated that one's weight can be increased at the rate of a pound a week merely by eating five ounces of sugar daily. This does not mean by using it as a sweetening to coffee or tea, but by eating it solid. More recent investigations than Liebig's show clearly that the albumen (the floury part in corn, wheat and like grains, the fleshy part of the cocoanut, and so on) is the principal source of the fat stored in the body. This albumen, after it has reached the cells of the tissues, undergoes certain chemical changes by which part of it is converted into fat, and part goes to the nutriment of the tissue cells. The cells can elaborate fat from any kind of food, but far more readily from some kinds than from others. I offer herewith some suggestions, and give a list of articles of food chiefly farinaceous which a person desirous of increasing his weight should confine himself to at the table. Sweet and Irish potatoes, sweet peas, beans, green corn, bread, tapioca, butter, liver, apples, arrowroot, barley, beets—these are very fattening. Crackers (especially sweet), cakes, carrots, grapes, gravies thickened with flour, the dressing of poultry, honey, maccaroni, oatmeal, parsnips, preserves and sweet fruits, rhubarb, sago puddings, all kinds of pastry, soup (thickened like mock turtle), mush and milk and mush fried and battered, mince pies, puddings of every kind, all fresh fruits, sweetened and with cream, ice cream and sauces, broths and melted butter, a lump of which should be put into all vegetables and used freely upon bread. A person dieting for corpulence who eats only lean meats may be allowed a little butter, as some fat is needful to the system; but if eaten immoderately butter is exceedingly fattening. Rice, though popularly supposed to be flesh forming, is not really so if we may judge of its qualities by those thin races of rice-eaters, the Hindoos and Chinese. Five articles of food may be said to be the foreordained means of building up fat. They are bread and butter, milk, sugar and potatoes. If you would wax fat eat candy, as much as thy purse can buy. Fanny Davenport blames the bonbon box for her obesity. Nothing of flesh, fish, fowl or fruit is forbidden to those in the pursuit of adiposity, but the oilier kinds of all eatables are to be preferred. Veal and pork rather than beef and mutton, goose and duck rather than turkey and chicken, and the oilier sorts of fish, such as eels and salmon. Eat only the yolks of eggs and all vegetables which contain sugar. Pumpkin, when made into pies, is very fattening. Do not eat cranberries, lemons, lettuce, spinach, cabbage (except the red, but not pickled; no pickles or pickled viands are allowed). Asparagus and tomatoes are for the consumption of the fat, not the lean, but to these are permitted cheese, lentils, all kinds of sweet and made dishes, rich gravies, thick sauces, corn meal in all its numerous forms, salep, sago, succotash, sucking pigs, bananas, and nuts of every kind that grows. Pleasant indeed are the ways that lead to corpulence. Its broad avenues may be named Eat Street, Drink Street, Sleep-and-Take-Your-Ease Street. You may feast on boiled chestnuts, doughnuts, griddle and buckwheat cakes, molasses, pineapples and cocoanuts. Eat only sweet oranges and all preparations of chocolate. Coffee is allowed. It has no effect either to fatten or reduce in itself, but can be rendered fattening by adding an excess of milk and sugar. A cup of hot chocolate, with milk and sweetened, taken nightly at bed time ought to put flesh on a skeleton. At meals drink milk, the thicker with cream the better. Use no vinegar nor acids nor cider. Take no lemonade nor tea. Milk punch is excellent, but should be drunk sparingly. Shakespeare says that use doth breed a habit in a man." He always knew what he was writing about, did Shakespeare. The daily recurrence of anything is what fixes it into a habit. Medicine taken one day and left off the next does no good, effects nothing. So it follows that the fattening process, once begun—to be effective—must be persisted in. Port wine is fattening, so are all malt liquors, especially lager beer. A friend of mine who was lean to emaciation had vainly tried to "flesh up," when she was recommended to drink a schooner of lager every day with her luncheon. She followed this pleasant prescription and by the end of a year was so bulky that she was obliged to forswear the beverage on account of obesity. To the lean are permitted as drinks champagne and other sparkling and sweet wines, especially port, which by the way is to blame as a rule for the obesity of English dames in high life, Sarah, Duchess of Marlborough, drank three glasses of port daily until her weight increased out of all proportion to beauty. It will be seen by the above list that a mixed diet, containing plenty of fats and starches, a little more albumen than is needed to maintain the equilibrium of fat and flesh should be eaten by the thin, and the surplus of albumen fat ought soon to make itself apparent in the form of the eater. At the same time, gorging one's self should not be indulged in. It is unnecessary, and, indeed, detrimental to the desired end. It should be fully understood that in the kind of food, rather than in the quantity, is the cause of the formation of fat to be sought. Weigh before beginning the fattening process and every week thereafter, being careful to wear the same amount of clothing on the scales. Determine just how much fat you require for your size and age and be careful not to exceed it, for while a moderate reserve of fat is good to draw upon in time of sickness, a large amount of it endangers the life in many ways. Obesity once started in the system is apt to increase of itself and steadily progress until checked. Therefore, upon the appearance of the first few pounds in excess of what you should weigh to be perfectly proportioned, abandon the exclusively fattening diet. To grow stout gradually, which is the better way, you should lead a calm, quiet, inactive, sedentary existence. Physical exertion works off superfluous flesh. In consequence of the deprivation of exercise convicts usually grow fat in prison. Corpulence is almost unknown among professional dancers and gymnasts, and among the Arabs and other nomadic tribes. Real mountaineers are never unduly fat, and wild animals are always lean, because they live in a state of constant movement. Do not imitate them, but rather the lazy lapdog which sleeps much and eats more of dainty, sugared little tidbits. Running, rowing and gymnastics are not for those who would be fat. Their exercise should be gentle and passive, riding rather than walking; they should be "wall flowers" in the ball-room and observers at the skating rink and swimming pools. If you would increase your adiposity, let the street car which is a few paces off go past without you. Quietly and contentedly wait for the next one. Patronize the elevator; when you must go up stairs take your time. Never bathe in water hot enough to cause perspiration. Keep cool, for the mind has much to do with getting fat, as well as in other matters. All the old time proverbs upon this subject refer to the mind more than to the body, such as "Laugh and grow fat," "Eat, drink and be merry;" not walk, jump, run and row and grow fat, but laugh and sleep. Sleep all you can and cultivate the practice of taking forty winks anywhere and everywhere. Above all, do not lie awake or pace the floor o' nights worrying about things. "Let the other man walk." Finally, drink no ice-water. Drink as little water as possible. You will be surprised to find how small a quantity is really required to satisfy the thirst. Water increases the size by bloating the body. Lager acts measurably in the same way. The increase caused by it is not owing to healthy flesh. It is hardly possible to give any idea of just how long it will take to fatten a person while following out the rules here laid down, as temperament and heredity differ so in individuals. One may have an inherited tendency to corpulence and fatten speedily, while all efforts will seem to fail with those to

whom leanness is a birthright. Nevertheless, a certain degree of plumpness can, in the long-run, be acquired by any one who perseveres in the diet and adopts the suggestions here given. Only two things can be positively stated about the fattening process. The first is that women are more disposed to corpulence than men because men lead, as a rule, more active outdoor lives than women. The second is that after forty—when every one is said to be either a fool or a doctor—both sexes "take on" flesh more easily than before that age. A little attention to dress, with a view either to increase or decrease the appearance of the real bulk, should be given by those afflicted with adiposity or the reverse. In costuming, the thin have the advantage over the fat. A lean man can hide his emaciation under loose pantaloons and large, easy fitting coats. The "skeleton dude," whose face is not gaunt, wears in the streets big garments, large coats, padded about the chest and shoulders so that he appears only a little thinner than the rest of mankind and not the "living skeleton" he is really. No such devices will conceal the too ample proportions of the fat man, who should never wear a dress coat—clawhammer—but a frock coat of rather easy fit and buttoned all the way down. No matter if tight trousers are the mode, his should always be somewhat wide. Too lightly fitting clothes are an abomination on stout persons. Nevertheless fat women, with servile subservience to prevailing fashions, attire themselves in gowns, etc., expressly designed to hide the deficiencies of thin women. For the modes of the last fifteen years we are indebted to two women, both lean, one extraordinarily so—the actress, Sarah Bernhardt, the other the Princess of Wales, whose neck it is said is so long and slender as to resemble a giraffe's. Hence all these elaborate throat frills and furbelows which are in vogue nowadays give an adipose woman the appearance of having her head seated directly upon her shoulders. Bernhardt is as great a genius in devising costumes as she is in acting, but her ingenuity is entirely expended in trying to deceive the eye as to her thinness. To hide her flail like-arms she introduced the wrinkled glove reaching to the shoulder. To her narrow shoulders we owe the hideous leg o' mutton sleeve, and to her long gaunt limbs and skeleton frame generally are due the thousand and one variations in draped skirts that have been rushed in and out of fashion for the last dozen or more years. We have to thank her for the bustle and hip draperies. One monstrosity alone she has spared us—the hoop skirt. With her strivings after the appearance of plumpness Sarah has novel ideas and an eye to the graceful and beautiful, but her creations are ludicrous when worn without modification by women whose too solid flesh will not melt nor be squeezed out of sight by tight lacing. What a picture a squat, podgy woman looks attired in the fashion of this year of our Lord, 1891! The short, full Medici cloak, which, falling just below the waist line, cuts the form in two, as it were, giving the effect of an Irish peasant's "short gown," breaking and shortening the line of the form, when the sought for effect should be long sweeping and unbroken. The present manner of draping the skirt is pretty and graceful on a slight figure, but when the material is stretched without a wrinkle over the broad expanse of the hips of a stout woman the width of flank it suggests is anything but pleasing. All the fullness of the skirt, and necessarily all the weight, is massed at the back, so that with the length it is hard for the obese woman to walk at all. The tight, long, armor-like waist encases her like a vise, hindering her breathing, except in gasps. The immense shoulder sheafs almost double in looks her already "a world too wide" shoulders. Only more unbecoming to full figures than the Medici cloak is the Medici collar, which reaches to the ears. Hats are too wide of brim and too low of crown to look well above double chins, heavy jowls and massive heads. There is hardly a prevailing style which was not expressly designed to increase the width of thin women, and stout women should modify them so that their defects of form will not be augmented by their attire. Stout ladies, let me entreat you to shake out a reef in the skirt so as to give the lower limbs room to move about without tugging at and straining the tether of tape in the rear of the dress. Let the waist be at least loose enough to be fastened without the aid of a button hook. Let the sleeves be only slightly full and drop carelessly away from the shoulders instead of being wired stiffly up almost to the ears. Lower the hard, high Medici collar sufficiently to show that although overly plump, nature has not denied you a neck altogether. Around the throat wear a single ruching or lace only scantily gathered in. Let a small shoulder mantle of jet or a half fitting jacket replace the ugly Medici cloak which, by the way, was not as a general thing worn by women but by men rather as an ornament than as a protection from the cold in the days when they wore doublets and hose, which reminds me of the movement now on foot to dress women in a similar manner to men. It is my belief that when, or if a great army of women should ever march forth in trousers, sack coats and the rightly named plug uglies of masculine wear, no fat women will be found in their ranks. Our fair, fat friend will draw the line at trousers, if wear them she must without her petticoat, that heirloom of the ages, worn by gentle and simple, old and young, and bequeathed from woman to woman, from generation to generation, from century to century, through all the vanished past. In every clime, time and country, woman has invariably worn some covering for the hips—it would seem a feminine instinct. It has borne many names, has changed from long to short, from scant to full, has been plain and adorned, but in some shape or other woman has never wholly abandoned the petticoat, and I think never will. However utilitarian and comfortable may be the male dress of the nineteenth century, there is a large majority of female forms for which it is especially ill adapted—the bent, scrawny grandmother; the deformed, the passe girl and the obese elderly woman. I fear me much that the ranks of the female dress reformers will be mainly recruited from those whose lankiness alone would make trousers appropriate wear—and then—may I not be there to see the army of the "lean and slippered pantaloons."

500,000 MILES A MINUTE.

AN ELECTRIC CURRENT GIRDLES THE GLOBE IN THREE SECONDS.

Philadelphia scientists are preparing to find out how fast an electric current travels. An experiment will be made, probably from the Franklin Institute, by connections over the Atlantic cable to Liverpool and return. A recent test appeared to show that an electric current is a slow coach as compared to light, being only able to get over to Europe and back in something like a second, or at the rate of only some four hundred thousand miles a minute, while light ambles along at a million-mile-a-minute gait. The Philadelphia scientists who are proposing to make further investigation are not satisfied to give up the record to sunlight, and hope to prove that the electric current, if not handicapped, is the swifter element. The most recent experiment was tried at McGill College, Montreal, says the Philadelphia *Record*. The current was transmitted in Montreal, was transferred to the cable at the Newfoundland cable station by means of Thomson's mirror galvanometer, sent across to the station at Liverpool, and returned to Montreal by the same method. The distance traversed, partly by overhead wire and partly by cable, was 8,000 miles. From the time the current left the key in Montreal until it returned to the receiver in the same office just 1 second and 1-20th of a second had elapsed; but the conditions were not as good as they might have been, hence the further experiment to be made here. The rapidity with which the current travels over short wires with no delay indicated unlimited possibilities in the direction of practical tests. Prof. Marks, of the Edison Electric Light Company, is authority for the assertion that if the globe was encircled with a continuous cable a current would travel the entire distance in a trifle over three seconds. At this rate a current would travel to the sun, covering the entire distance of 96,000,000 miles, in three and a half hours. "In this age of science," said one of the gentlemen who will participate in the experiments, "people have an idea that we know so much now there is nothing more to be discovered. Why, we are yet in our infancy as far as electricity goes. New discoveries will yet be made, and we will live to see them put into practical use, which will revolutionize the entire world. The experiment which we are about to make in telegraphy is only a feeler which will lead to other and more startling experiments. The establishment of telephone communications between the hemispheres is already being seriously discussed."

WEATHER SIGNS.

THE INDICATIONS FORMULATED BY THE N. Y. FARMERS' CLUB.

The formula of popular weather signs which is most kindly treated by the official observers is that adopted by the Farmers' Club of the American Institute a number of years ago: 1. When the temperature falls suddenly, there is a storm forming south of you. 2. When the temperature rises suddenly, there is a storm forming north of you. 3. The wind always blows from a region of fair weather towards a region where a storm is forming. 4. Cirrus clouds always move from a region where a storm is in progress towards a region of fair weather. 5. Cumulus clouds always move from a region where a storm is forming. 6. When cirrus clouds are moving rapidly from the north or northeast, there will be rain within twenty-four hours, no matter how cold it is. 7. When cirrus clouds are moving rapidly from the south or southeast, there will be a cold hailstorm on the morrow if it be in the summer, and if it be in the winter there will be a snowstorm. 8. The wind always blows in a circle around a storm, and when it blows from the north the heaviest rain is east of you; if it blows from the south, the heaviest rain is west of you; if it blows from the east, the heaviest rain is south 9. The wind never blows unless rain or snow is falling within 1,000 miles of you. 10. Whenever heavy white frost occurs, a storm is forming within 1,000 miles north or northwest of you. This is about as far as popular weather prophecy has yet advanced. It is not a great distance, but it is better than the old fashion of trusting to the italic warnings in the almanac, prepared a twelvemonth ahead: "*About these days look out for——*."

SAVE THE EYES.—All incandescent electric lights should be shaded for desk work. Since they have been generally introduced, it has been found that where the rays fall direct upon the eyes of newspaper writers and desk workers, there has been a great increase of complaints of dimness of sight and inflammatory affections of the eyes.

OUT OF HIS LINE.—Were one to take the patents which have been proved commercially unpractical, and trace them to the source from which they originate, it would be found—almost without exception—that the inventor was a man who had stepped out of his own business and had invented some wonderful thing in a line with which he was unfamiliar.—*Journal of Useful Inventions.*

A GOLDEN RULE.—Each one of us is bound to make the little circle in which we live better and happier; each of us is bound to see that out of that small circle the widest good may flow; each of us may have fixed in his mind the thought that out of a single household may flow influences that shall stimulate the whole commonwealth and the whole civilized world.—*Dean Stanley.*

ADULTERATIONS IN NEW HAMPSHIRE.

LAWS FOR THE SUPPRESSION OF ADULTERATED FOODS AND DRUGS.

AN ACT to prevent the sale of adulterated foods, drugs, and other articles.

Be it enacted by the Senate and House of Representatives in General Court convened.

SECTION 1. No person shall sell, or offer for sale, any adulterated drug or substance to be used in the manner of medicine taken internally or applied externally, or any adulterated article of food or substance to to be used in the manner of food or drink.

SEC. 2 If any drug or substance used for medicine sold under a name recognized by the United States Pharmacopœia, or under a name not recognized in that work, but found in some other pharmacopœia, or other standard work of materia medica, differs materially from the standard of strength, quality, or purity laid down in such work, or contains less of the active principle than is contained in the genuine article weight for weight, or falls below the professed standard under which it is sold, it shall be deemed to be adulterated within the meaning of this act.

SEC. 3. If any food or substance to be eaten or used in the manner of food or drink contains a less quantity of any valuable constituent than is contained in the genuine article weight for weight, or contains any substance foreign to the well-known article under whose name it is sold, or is colored, coated, polished or powdered, whereby damage is concealed, or contains any added poisonous ingredient, or consists wholly or partly of any decomposed, putrid, or diseased substance, whether manufactured or not, or has become offensive or injured from age or improper care, it shall be deemed to be adulterated within the meaning of this act.

SEC. 4. Whoever fraudulently adulterates for the purpose of sale any article of food or drink, drug or medicine, or knowingly sells any fraudulently adulterated article of food or drink, drug or medicine, or any kind of diseased or unwholesome provisions as defined in this act, shall be imprisoned not exceeding one year, or be fined not exceeding four hundred dollars, to be recovered by indictment for use of the county in which the offence was committed.

SEC. 5. The State Board of Health shall take cognizance of the interests of the public health relating to the sale of drugs and foods and the adulteration of the same, and shall make all necessary investigations and inquiries in reference thereto, and the analytical work acquired under the provisions of this act shall be made by the United States Experimental Station, and New Hampshire College of Agriculture and the Mechanic Arts.

SEC. 6. Every person offering or exposing for sale any drug or article of food within the meaning of this act, shall furnish to any analyst, or other officer duly appointed for the purpose, who shall apply to him for the same and tender him its value in money, a sample sufficient for the purpose of the analysis of any such drug or article of food which is in his possession.

SEC. 7. Any person who has reason to doubt the purity or genuineness of any article of food which he has purchased, may send at his own expense a sealed sample of it to the State Board of Health for inspection. If upon examination the article appears to be adulterated, said board may obtain a certified sample of it by whatever way seems best to them, and should this sample prove to be adulterated the board shall begin proceedings at once against the vendor of the article.

SEC. 8. Whoever hinders, obstructs, or in any way interferes with any inspector, analyst, or other officer appointed hereunder in the performance of his duty, shall be punished by fine not exceeding fifty dollars for the first offence, and one hundred dollars for each subsequent offence.

SEC. 9. Before commencing the analysis of any sample, the analyst shall reserve a portion which shall be sealed; and in case of a complaint against any person, part of the reserved portion of the sample alleged to be adulterated shall, upon application, be delivered to the defendant or his attorney, and part of the reserved portion of the sample shall be delivered to the secretary of the State Board of Health.

SEC. 10. The State Board of Health shall adopt such measures as it may deem necessary to facilitate the enforcement of this act, and for the collecting and examining of drugs and foods, articles of clothing, fabrics, wall paper, or anything containing poisonous pigments or substances whereby the health of any person wearing or using the same may be injured.

SEC. 11. Said Board of Health shall report annually to the governor and council the number and kinds of samples examined, together with the results of such examinations, the number of prosecutions made under this act, and an itemized account of all money expended in carrying out the provisions thereof.

SEC. 12. All acts and parts of acts inconsistent with this act are hereby repealed, and this act shall take effect upon its passage.

Approved April 7, 1891.

METEORITES.

SOME CONJECTURES RESPECTING THEIR ORIGIN.

In former times it was thought that meteorites were of terrestrial origin, thrown out by volcanoes, or condensed vapors, or else that they hailed from the moon. These suppositions do not hold good when we consider the enormous initial velocity, the great number, direction and periodical recurrences of these phenomena. For the same reasons, it is impossible that they should be fragments of a destroyed satellite—a second moon—supposed to have revolved around our planet in past ages, or yet that they are diminutive independent planets of our solar system. The hypothesis that they are identical with shooting stars and comets is the one accepted almost universally by scientific men. Most important discoveries tending to prove this assumption were made by Shiaparelli, showing that shooting stars, as well as meteorites, are solid bodies, which enter the atmosphere of our earth with an immense velocity and become luminous because of the resistance offered by the air. It has been calculated that they usually appear at a height of about seventy miles above the earth and disappear at a height of fifty miles. The cause of their disappearance or extinguishing is to be looked for either in their once more leaving our atmosphere, or that they are atomized by the fierce heat generated by their extremely rapid flight and the resistance offered by the atmosphere. The latter assumption would account for the continuous fall of cosmic dust upon the surface of our globe. The velocity with which they enter and pass through our atmosphere is enormous. It is many times faster than sound, the flight of a cannon ball, and even the planets revolving around the sun. The earth travels through space at the rate of 19 miles per second. Mercury the fastest planet, covers 29.87 miles per second, while a meteorite which fell at Pultusk, Russia, had a velocity of 33.78 miles per second, although it had to overcome the resistance of the air. In space, consequently, it must have traveled still faster. To clearly understand the high degree of velocity implied by these figures, it is well to add that the fastest cyclone scarcely reaches 150 feet per second, at which rate it exerts a pressure of about fifty pounds per square foot. It now remains to explain the assumption that meteorites and shooting stars are identical, and to quote the facts upon which this assumption is based. We know that both are solid bodies which enter our atmosphere from without, and that they become luminous for the same reason. Furthermore, the cosmic iron dust observed in localities where its origin could not be doubted has been found to have the same chemical composition as larger pieces of meteoric iron seen to fall by unimpeachable witnesses. It cannot be denied that there is a very great contrast between the little star that silently glides through space and noiselessly disappear and the terrifying appearance of a ball of fire, that, approaching with deafening detonations, sends down on us a hail of stones. Both spectacles, however, are but the extremes of a chain of closely connected phenomena. Considering with what extreme velocity these bodies pass through the atmosphere, it is not difficult to comprehend that particles, and those having the greatest momentum, are destroyed long before they reach the earth, and at such a height that the noise of their passage and disintegration becomes inaudible to us here below. We find a further confirmation for the belief that both of these phenomena have the same source in the well established fact, proved in many instances, that the direction of the meteorites corresponds to that of shooting stars observed at the same time, and points to a common point of radiation. The detonations acccompanying the fall of a meteorite have three distinct causes: The whizzing is caused by its rapid passage through the air; the crackling by the combustion of the materials composing it; and the thundering, by columns of air rushing into the vacuum which it leaves behind.—*Great Divide.*

ELECTRICAL POWER.

A FORECAST OF THE GREAT MECHANICAL POSSIBILITIES OF THE FUTURE.

The problem of the transfer and distribution of power, at this period, can scarcely be deemed of less economic importance than was the application of power itself. The importance of the problem may be seen at a glance if one only considers the incalculable horse-power of the Niagara Falls, or of the ocean in its changes between ebb and flow. The successful achievement of the transfer and economic application of the forces of nature would bring about a complete revolution of industrial conditions. The practical application of the principle which was exhibited at Frankfurt-an-Main on May 15th was simply as follows: In a machine so constructed that wire from insulated spools can be led over magnetic poles, an electric current is generated whose intensity and strain is dependent on the speed of the rotation and the power employed. The electric current thus generated is connected by two strong wires with a second machine of similar construction, the wire spools of which are set in motion by the electric current from the first machine. Theoretically it should now be possible to get as much power from the secondary dynamo as was employed in generating the current in the first or primary dynamo. The explanation is that an electric current being guided into a dynamo at rest will set its armature in rotation, and as the distance between the two dynamos, the generator and receiver, does not affect the result, the dynamo would appear to be an unexcelled apparatus for the transfer of power. And in fact no other method of transferring power can rival the electric system. The electric conductors can be laid to the most out-of-the-way places; they can be sunk as insulated cables in the earth, or in river beds, or they can be carried on poles like telegraph wires, by the aid of non-conductors, to the place where the second dynamo is to be employed in driving the labor machine. This capacity of the electric dynamo to transmit power by means of insulated wires, up hill and down, renders it eminently adapted for employment in mines, tunnels, and other works in the mountains, especially in the operation of wire tramways, on which principle a postal line between Monte Video and Buenos Ayres has been already designed. Speaking generally, the dynamo machine can be employed for all purposes for which steam and gas motors are at

present employed and with many enormous advantages. There are no boilers to heat, no waste of gas, it is ready for work at any moment. The electric current is drawn from electric works where electricity is stored in enormous quantities, and supplied cheaply; and, finally, with one touch of the hand the motor is set in operation. The amount of electricity employed is precisely proportioned to the labor performed, and, what is of prime importance, the electric motor, in relation to the importance of the work performed, is very easily operated. As regards the dreaded danger of powerful currents, this can be so thoroughly guarded against by transformers and accumulators, that it is really freer from danger than gas or steam. Of chief interest for the general public is the application of electric motors to the operation of street railway cars, a system which is already rapidly coming into use. And now as to the economic importance of this transfer of electric force. There are two primary sources of power on earth: The sun's heat stored up in wood and coal which we convert into steam; a very imperfect method inasmuch as from the imperfection of our machinery five-sixths of the actual power stored in the combustible is wasted. Moreover, this source of power must be carried to the place where it is intended to utilize it. The second source of power is the force generated by the rivers in their course, by the ebb and flow of the tides of ocean, by the winds. The utilization of these sources by means of dynamos in the manner above described has already had practical effect given to it on the small scale, but the method is now awaiting its crucial test at Frankfurt-an-Main, where arrangements have been made for the transfer of 300 horse-power from the Neckar. And as the system is operating satisfactorily on a smaller scale in many places in Switzerland, no doubt is entertained as to the success of this first experiment on a large scale. Should it work as satisfactorily as is expected, it will not be long ere the Falls of Niagara will be put into harness to drive the machinery of New York and Chicago. The French, too, have planned works at Havre for utilizing the ebb and flow of the tide to work turbine wheels which will transfer the power generated to dynamos, from which it will be conveyed by wire to Paris for motor and lighting purposes. The influence which this use of the vast forces of nature will exercise upon social and industrial conditions will be more apparent when we realize that it has other applications than the mere transport of motive power. The present condition of science leaves no doubt that any one form of motion can be transformed into any desired form—all the forces of nature into heat, light and mechanical power, as well as into electricity, and any one of these forms of motion into any other. Electricity is the form of motion most convenient for transfer into other forms, and with that at his command the possibilities of man's achievements transcend the dreams of fable and imagination. "Electra" is the fairy whose magic wand is already in motion, rearing pillar on pillar of the stately palace on which humanity shall sit enthroned, with all the forces of nature obedient to its behests. H. Lux.

NATIONAL CONTRASTS.

REPUBLICAN SIMPLICITY *versus* ROYAL DISPLAY.

There was a great deal of fuss and parade at Windsor Castle on Sunday. The tall, light-haired young man who styles himself the "war lord" of Germany was the guest of the motherly old lady whose State title is Victoria Regina, and soldiers and servants, gay ladies and lords whose breasts glittered with orders, were alike on the qui vive. The Kaiser took a carriage ride, and his equipage was surrounded from start to finish with outriders and gorgeously uniformed guards. He breakfasted with his grandmother, and the meal rose to the dignity of a State affair, with obsequious flunkeys by the dozen to see that everything went right' and watchful sentinels at every door to see that no McAllisters came near the quarters where their royalties took their chops and coffee. The Kaiser went to church, and a splendid array of plumed and bedizzened military attaches rode by the carriage. The English Life Guards, one of the finest, if not the finest, of the crack cavalry organizations of Europe, were paraded, inspected, and then fell in and solemnly escorted the Kaiser and his disreputable uncle, the Prince of Wales, to the place of worship. They waited, grim and stately, in stiff ranks, outside, while the services went on. Then, with the same precision and ceremony, the party went back to the castle again, making almost as brilliant, though not as instructive, a show as one of Barnum's circus parades. On the same morning the simple, unostentatious gentleman who is the President of the United States drove to church at Cape May with two members of his family, without any escort or fuss whatever, just as any other plain citizen might have done. Nobody expected the President at that particular church; nobody made any demonstration or display because he went there At the same time President Carnot, the official chief of the great armed French Republic, was addressing the scholars at a school for working men's children in Paris, having driven there unheralded and unescorted, as quietly and unostentatiously as President Harrison had driven to Cape May. The contrast between the royal and republican methods of going about is striking enough to impress the dullest mind. It is the contrast between sense and nonsense, between silly and vulgar and costly display, for which the people have to pay, and dignified, manly simplicity which costs the State nothing and sets its people an example to be proud of. It is calculated to make sensible and self-respecting Americans and Frenchmen heartily glad that they live under republican forms of government in which the head of the State is merely its first citizen.—*Press, July 7.*

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.
July.

MEAT.—Beef, lamb, mutton, ham, kidneys, liver, sausage, veal.

GAME AND POULTRY.—Pigeon, chicken, duck.

FISH.—Anchovy, bass, bluefish, blackfish, cod, eels, clams, flounder, haddock, halibut, herring, lobsters, mackerel, mussels, perch, porgie, prawn, salmon, shad, turtle, trout, sturgeon, whiting, weak-fish.

VEGETABLES. — Beans, cucumbers, carrots, cauliflower, egg-plant, lettuce, onions, parsley, parsnips, potatoes, shallots, spinach, turnips, radish, rhubarb, corn, beets.

FRUITS.—Cherries, strawberries, raspberries, huckleberries, melons, gooseberries, blackberries, peaches, pears, tamarinds bananas, pineapples.

PRACTICAL RECIPES.

OKRA SOUP.—Cover a leg of mutton with cold water, put with it four dozen okras and boil for an hour; then add six tomatoes, six small onions, one green pepper, a bunch of thyme and parsley, and let it boil seven or eight hours. Season it with salt and red pepper to suit your taste, and if agreeable add a piece of salt pork which has been previously boiled.

BOILED COD WITH OYSTER SAUCE.—Rub some salt over the fresh fish an hour or two before boiling; boil till done, then serve with the following sauce: Drain the liquor from a pint of oysters; beard the oysters and put the beards to cook with the liquor, adding a bit of mace and lemon peel. Throw the oysters meanwhile into some cold water, drain them after a few moments, strain the liquor and add it to them with a good lump of butter rubbed into a teaspoonful of flour. Cook until the sauce thickens, then add sufficient milk to make it the right consistency; boil up, add a squeeze of lemon juice and serve.

ONION OMELET.—Chop a small Spanish onion fine, and fry it a light brown in two teaspoonfuls butter; beat slightly four eggs and mix them with the onion; season with pepper and salt and cook; serve garnished with parsley.

YORKSHIRE PUDDING.—Beat thoroughly five eggs; add to them a teaspoonful of salt and a pint of milk. Sift together two teaspoonfuls of baking powder and a pint and a half of flour; add the egg mixture gradually and make a stiff batter; put it in the pan, not under but beside a roast of beef, and bake.

GINGERBREAD.—Beat together one cupful molasses, half a cup melted butter, half a cup milk, two and a half cupfuls flour, with which is mixed two teaspoonfuls baking powder, one teaspoonful ginger, one teaspoonful cinnamon, and a saltspoonful of cloves. Currants may be added if liked.

RICE BLANCMANGE.—Wash a pint of rice and boil it in a quart of milk until tender; add three ounces of sugar, and stir while cooking until the sugar is dissolved. Remove it from the fire, and when cold add the well-beaten yolks of five eggs. Soak one ounce of fine gelatine in cold water until soft, add to it three gills of boiling cream and two ounces of sugar; stir until dissolved, strain into a tin, which place in a wooden bowl surrounded with ice. When it commences to set whisk into it the whipped froth of three half-pints of cream, flavor with a few drops of extract, and work this into the rice mixture as lightly as possible. Put in the bottom of the moulds a tablespoonful of preserves or jelly, fill the moulds with the preparation and keep them on ice until wanted.

CURRANT JELLY.—Put your currants, freed from stems and leaves, into a kettle and heat, but do not boil them; remove them from the fire and mash the fruit so as to break every currant. Suspend the fruit in a flannel jelly bag, and set an earthen dish beneath it to catch the juice; when all is out, boil it in the preserving kettle with a pound of sugar to each pint of juice, skimming it as it cooks. Test it by putting a little in a saucer on ice, and if it thickens it is done. Put in glasses, cover with papers dipped in brandy, then with thick brown paper pasted down around the edge, or else use regular tin jelly glass lids.

IMPROVED WELDING.—A new welding method, invented by H. E. Fowler, New Haven, Conn., refers principally to lap-welds for joining the ends of band saws, plates and bars, and the manufacture of water-pipes, boiler-shells and the like. The process consists in first forming holes in one of the parts to be united, so that when the parts are heated and welded by any convenient means, a portion of the metal of the other part will be forced into said holes, strengthening the joint. In modifications holes are formed in both the parts to be welded, and in some cases these holes are made to coincide and pins or rivets are inserted.

WORLD'S PEOPLE.—In the proceedings of the Royal Geographical Society for January, 1891, it is estimated that the population of the world in 1890 was 1,487,600,000, representing an average of 31 to the square mile and an increase of 8 per cent. during the decade. Of the continents, Asia has the largest population, 850,000,000, and the lowest percentage of increase, 6 per cent. Australasia has the smallest population, 4,730,000, and the smallest average per square mile, 1.4, but the highest rate of increase during the decade, 30 per cent. Europe is the most thickly settled continent, with a population of 380,200,000, which is 101 to the square mile. The population of North America is estimated at 89,250,000, which is an average of 14 to the square mile, and represents an increase of 20 per cent. during the past decade.

FRUIT DIET.

THE PROPER USE OF THE SEASON'S GIFTS.

A trip through our public markets and among the commission houses along the side streets down town might cause a stranger to declare we must be a nation of fruit eaters, judging from the immense quantities and the infinite variety of fruits to be seen upon all sides. Pomona, the goddess of the fruit trees, reigns supreme, and is likely so to rule for the next few months. Notwithstanding the fact that the city is teeming with fruit, there are thousands of unfortunates who rarely taste fresh fruit. Some of them are charges upon the city and live upon charity; others there are who look upon fruit as a luxury and not a necessity, and live on coarse greasy foods until disease overtakes them and warns them to change their diet. It is absolutely necessary to teach some a severe lesson before they obey the laws of health. The Pacific coast is sending us peaches, plums, apricots, and cherries. The South is supplying us with melons, canteloupes, blackberries, green apples, grapes, pears, etc. Tropical America is stocking our fruit stalls and warehouses with bananas, pineapples, alligator pears, sapodilla plums, custard apples, cherimoyers, green or jelly cocoanuts, mammee apples, and many other fruits the names of which are unpronouncable. Yet better than all these are our native currants and raspberries. If the Board of Health should compel each inhabitant to eat at least a quart of currants daily there would be little use for the sanitary corps of that department. A more delightful breakfast invigorator than a combination of currants and raspberries would be hard to find. The tameness of the raspberry blends perfectly with the acidity of the currant. We may cook the currant in open tarts, but not the raspberry. The latter forms a tempting dessert served as shortcake; not the sweet shortcake of the shops, but the old-fashioned New England shortcake, made with sour milk, in the absence of which baking powder is used. To prepare it: Sift together half a pound of flour, a coffee spoonful each of salt and sugar, and two teaspoonfuls of baking powder. Work into this mixture a quarter of a pound of cold washed butter; add gradually two gills of cold boiled milk; mix quickly with a knife; dredge flour over the molding board, and turn the paste upon it; toss with the knife until it is floured; pat it gently with a floured rolling pin, and roll it down to half an inch thickness; put a plate on top of the paste and cut round it. Grease a baking tin, put the rounds upon it and bake. When done, make an incision round the centre of the edge and tear apart. If not too thick, they need not be divided. Arrange a layer of the berries on one-half of the cake, dredge with fine sugar, and place the other half on the berries; cover the top with the largest berries, as restaurant people do, add a liberal quantity of sugar, and serve. A mixture of whipped white of egg and sugar is sometimes added to the top layer, and is placed in the oven a moment to set, but too much heat will spoil the berries.—*Sun.*

INTELLECT AND DIET.

THE TABLE HABITS OF SOME OF THE WORLD'S GREAT MEN.

We find in the *Gentleman's Magazine* some interesting, suggestive and pleasantly anecdotal papers on "Living to Eat and Eating to Live," whence we extract the following: Great men are always credited with being abstemious in their eating and drinking, and the first Napoleon was no exception to the rule. Describing the food which was placed on his table to his physician, Dr. Atommarchi, he said: "Physicians have the right of regulating the table; it is fit I should give you an account of mine. Behold what it consists of: a basin of soup, two plates of meat, one of vegetables, a salad when I can take it, compose the whole service: half a bottle of claret, which I dilute with a good deal of water, serves me for drink; I drink a little of it pure towards the end of the repast. Sometimes, when I feel fatigued, I substitute champagne for claret: it is a sure means of giving a fillip to the stomach." The doctor having expressed his surprise at this temperate mode of living, he replied: "In my marches with the army of Italy, I never failed to put in the bow of my saddle a bottle of wine, some bread, and a cold fowl. This provision sufficed for the wants of the day; I may even say I often shared it with others. I thus gained time: the economy of my table turned to account on the field of battle. For the rest, I eat fast, masticate little; my meals do not consume my hours. This is not what you will approve the most, but in my present situation what signifies it?" He was referring here to his captivity at St. Helena. The daily habits of the poet Southey, a man who made literature a successful and healthy profession, are thus described by his son in his life of his father. "Breakfast was at nine, after a little reading, dinner at four, tea at six, supper at half-past nine, and the intervals filled up with reading or writing, except that he regularly walked between two and four, and took a short sleep before tea, the outline of his day when he was in full work will have been given. After supper, when the business of the day seemed to be over, though he generally took a book, he remained with his family, and was open to enter into conversation, to amuse and be amused." This rational mode of living deserved its reward: temperance, soberness and chastity preserved his mental powers vigorous to old age, and he has left to future generations work that will keep his memory green. Shelley was a vegetarian and an idealist. Perhaps, if he had been a meat eater, his verses would have displayed more passion and fire, for the contrast between his poetry and Byron's is striking, though Byron himself attributes his best work to the inspiration of gin-and-water. Byron's life is a melancholy example of how soon the candle that is lit at both ends

Buffalo Lithia Water, Spring No. 2, in Bright's Disease, Gout, Stone in the Bladder, and Diseases Generally of Uric Acid Diathesis, Etc., Etc.

DR. WM. A. HAMMOND, of Washington, D. C., Surgeon General U. S. Army (retired), Professor of Diseases of the Mind and Nervous System in the University of New York, etc.

"I have for some time made use of the BUFFALO LITHIA WATER in cases of AFFECTIONS of the NERVOUS SYSTEM, complicated with BRIGHT'S DISEASE OF THE KIDNEYS or with a GOUTY DIATHESIS. *The results have been eminently satisfactory.* Lithia has for many years *been a favorite with me in like cases, but the* BUFFALO WATER CERTAINLY ACTS BETTER THAN ANY EXTEMPORANEOUS SOLUTION of THE LITHIA SALTS, and is, moreover, better borne by the stomach. I also often prescribe it in those cases of CEREBRAL HYPERÆMIA resulting from OVER MENTAL WORK—in which the condition called NERVOUS DYSPEPSIA exists—*and generally with* MARKED BENEFIT."

DR. WM. B. TOWLES, Professor of Anatomy and Materia Medica, in the Medical Department of the University of Virginia.

"BUFFALO LITHIA SPRINGS, No. 2, belongs to the ALKALINE or, *perhaps, to the* ALKALINE SALINE Class, *for it has proved far more efficacious in many diseased conditions than any of the simple* ALKALINE waters.

"*I feel no hesitancy whatever in saying that in* GOUT, RHEUMATIC GOUT, RHEUMATISM, STONE *in the* BLADDER, and in all diseases of URIC ACID DIATHESIS, *I know of no remedy at all comparable to it.*

"*Its effects are marked in causing a disappearance of* ALBUMEN *from the urine. In a* single case of BRIGHT'S DISEASE *of the* KIDNEYS, I witnessed *decided beneficial results from its use, and from its action in this case I should have great confidence in it as a remedy in certain stages of this disease.* In DYSPEPSIA, especially that form of it in which there *is an excessive production of* ACID *during the process of nutrition,* in some of the PECULIAR AFFECTIONS *of* WOMEN, notably in SUPPRESSION of the MENSES, and in CHRONIC MALARIAL POISONING, etc., I have found it highly efficacious."

DR. G. HALSTEAD BOYLAND, late Professor of Surgery, Baltimore Medical College, late Surgeon French Army (Decorated), Member Baltimore Academy of Medicine, Member of American Medical Association.

"In BRIGHT'S DISEASE of the KIDNEYS, ACUTE or CHRONIC, BUFFALO LITHIA WATER, Spring No. 2, is, in my experience, *without a rival,* whether in the PARENCHYMATOUS form or INTERSTITIAL NEPHRITIS. In cases in which the ALBUMEN in the URINE reached as high as 50 per cent., I have known it under a course of this water gradually diminish and finally disappear, at the same time other alarming symptoms were relieved and the sufferers restored to health.

"In STONE in the BLADDER of the RED LITHIC ACID and the WHITE PHOSPHATIC DEPOSIT, the SOLVENT power of this water is *unmistakable.*"

Water in cases of one dozen half gallon bottles, $5.00 f. o. b. here.

THOS. F. COODE, Proprietor, BUFFALO LITHIA SPRINGS, VA.

burns out. Byron's horror of corpulence drove him to dietetic expedients to avoid it that certainly tended to shorten his life, such as chewing tobacco to stave off hunger and the desire for food, taking inordinate quantities of vinegar, and other questionable methods. Had he lived in these days he could have been told how to keep down fat and still live well, and enjoy most of the luxuries of life. Walter Scott passed a genial social existence, took plenty of exercise, lived temperately, and insisted on having seven or eight hours of sleep out of the twenty-four; hence he lived to a good age and did more work—that bears in every page of it the impress of genius—than any man of his day. Burns, his equally gifted countryman, lived to eat and drink, and hence the result. It is true he left poetry behind him that the world will not willingly let die; but what might he not have done? The high, strong, nervous system of the poet and literary man bears excess badly, and Swift seemed to know this, for in a letter to Pope he says: "The least transgression of yours, if it be only two bits and a sup more than your stint, is a great debauch, for which you will certainly pay more than those sots who are carried dead drunk to bed." The machinery of sensitive souls is as delicate as it is valuable, and cannot bear the rough usage that coarse custom inflicts upon it. It is broken to pieces by blows which common natures laugh at. Equally, when we descend into the lower regions of Parnassus, the abode of talent and cleverness, the care of the body is absolutely essential to long life and continued usefulness. He who lives by his intellect must take care of his stomach, for, after all, "mind is matter and soul is porridge."

ALABAMA OYSTERS.—Alabama owns about four square miles of oyster beds, "and these beds are amongst the most valuable in the United States. Every barrel of oysters taken out of the State is to pay a tax of ten cents, which will pay the expense of inspection and put into the State treasury about $15,000 a year."

Exhaustion

Horsford's Acid Phosphate.

The phosphates of the system are consumed with every effort, and exhaustion usually indicates a lack of supply. The Acid Phosphate supplies the phosphates, thereby relieving exhaustion, and increasing the capacity for labor. Pleasant to the taste.

Dr. A. N. KROUT, Van Wert, O., says:

"Decidedly beneficial in nervous exhaustion."

Dr. S. T. NEWMAN, St. Louis, Mo., says:

"A remedy of great service in many forms of exhaustion."

DESCRIPTIVE PAMPHLET FREE.

RUMFORD CHEMICAL WORKS,
PROVIDENCE, R. I.

BEWARE OF SUBSTITUTES AND IMITATIONS.

CAUTION:—Be sure the word "Horsford's" is *printed* on the label. All others are spurious. Never sold in bulk.

BUSINESS NOTES.

HORSFORD'S ACID PHOSPHATE

Makes delicious lemonade. A teaspoonful added to a glass of hot or cold water, and sweetened to the taste, will be found refreshing and invigorating. Dr. T. C. Smith, Charlotte, N. C., says: "It is an invaluable nerve tonic, a delightful beverage, and one of the best restorers when the energies flag and the spirits droop."

SAME BRAND.—She said to her grocer: "I bought three or four hams here a couple of months ago, and they were very fine. Have you any more like them?" Grocer: "Yes, ma'am. There are ten of those hams hanging up there." "Are you sure they are all off the same pig?" "Yes, ma'am." "Then I'll take three of them."

OLD-TIME BREAD.—The bread most commonly used by tradesmen in early days was made of barley, or rye mixed with peas. The finest bread was then called "simnel," the next class was "tourte," made of unbolted meal. "Irate" was bread made from wheat with the fine flour removed, and the commoner kinds were all sorts, black bread, and horse bread. These kinds of bread were in common use five centuries ago.

COCOA ADULTERATION.—Attention has been directed lately by the English papers to the alleged mischief resulting through the use of cocoas adulterated by added alkalies. Dr. Sidney Ringer, of University College, says in his work on Therapeutics that the sustained use of alkalies impoverishes the blood. There seems no reason for adding alkalies, except to give an appearance of fictitious strength.

NO SOAP.—It is stated that soap in India is regarded almost in the light of a natural curiosity, for it is rarely, if ever, to be obtained of a shopkeeper there. Of course it is sold in the larger towns; but the amount used by the natives must be very small, seeing that the total consumption of soap in India last year was only 5,000 tons. This means that the amount used by each person for the year was considerably less than one ounce.

FLOWERS IN LONDON.—It is said that during the London season some £5,000 are expended daily on cut flowers. On flower decorations for a big dinner party wealthy Americans will lavish hundreds of pounds. At a ball given recently by a rich merchant in honor of his daughter's coming of age, the portières separating the ball and supper rooms were made entirely of trails of stephanotis and of the delicate foliage known in Madeira, where it grows wild, as "Joy of the Country." The fragrant curtains were looped back with choice gardenias. The bill for decorations on this scale would, of course, work out to some hundreds of pounds sterling.

PULPIT AND BAR.—We have heard a good deal lately about reform in public-houses, but the most practical reformer is the rector of Hampton Lucy, England, who, according to the *Daily Chronicle*, personally owns and manages an inn, and that with the best results. He sells only the purest drinks, and is so careful to whom and in what quantities he sells them that drunkenness is unknown in his parish, whilst the local charities are fairly increased by the profits of the house, which are devoted to them. Hitherto, combined catering for spiritual needs and for spirituous ones have hardly been thought suitable for the same individual. But this may be only prejudice. The *fin de siècle* caterer ought to possess some original features.

DO TELL!—The following amusing bit of information we clip from *The Caterer* of London, for June. It appears that the base-ball players in America are in the habit of going about with their spiked shoes on. This curious custom has led the proprietor of the Continental, one of the first hotels of Philadelphia, to refuse to entertain them unless they desisted from the practice, obviously destructive to the fine carpets in the rooms and halls of the hotel. The players, however, transferred their patronage to another establishment. Yankees seem to advance but slowly in civilization. In Charles Dickens' time they freely expectorated on the best carpets. That habit they have since got rid of, and perhaps they will by and by come to learn that spiked shoes are not the proper thing to wear in a first-class hotel.

ORIGINAL. No. 70.

Virginia Corn Bread.

BY MRS. F. L. GILLETTE,
Author White House Cook Book.

Two teaspoonfuls Cleveland's Superior baking powder; two cupfuls white corn meal; one cupful flour; one teaspoonful salt; one tablespoonful sugar; two tablespoonfuls melted butter; three eggs; two and a half cupfuls milk.

Sift together all the dry ingredients, rub in the butter; then add beaten eggs and milk. Mix well and pour into round, buttered pans. Bake from thirty to forty minutes.

Use only Cleveland's baking powder, the proportions are made for that.

"Owing to the purity, strength, effectiveness and constancy of composition of Cleveland's Superior Baking Powder, I have adopted the same for use in my home."



Dr. Mott, late U. S. Gov. Chemist.
July 23, 1890.

25 CTS. PISO'S CURE FOR CURES WHERE ALL ELSE FAILS. Best Cough Syrup. Tastes good. Use in time. Sold by druggists. CONSUMPTION 25 CTS.

Fine Table Wines

From our Celebrated Orleans Vineyard.

Producers of the ECLIPSE CHAMPAGNE, 530 Washington St. SAN FRANCISCO.

Arpad Haraszthy & Co.

GENERAL AGENCIES:
NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOSEPH R. PEEBLES' SONS CO., 73 West Fourth Street.
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.

PURE PEPSIN

In Powder and Scale.

MANUFACTURED BY

ARMOUR & COMPANY, Chicago.

Guaranteed free from adulteration or make-weights; of excellent physical properties and high digestive power.

Under similar conditions, **ARMOUR'S PEPSIN** will exhibit greater activity than any other pepsin now before the profession.

The Manufacturers will be pleased to supply members of the Medical Profession with samples of their pepsin, and with full details regarding digestive strength, if desired.

SEE PAGE 320 FOR VALUABLE OFFER.

WATCHES.

EVERY one wants a watch, and naturally a good watch that keeps accurate time, presents a handsome appearance, and is inexpensive. If such a watch can be found of American manufacture, it is an additional appeal to our patriotism. Just such a watch as this ideal THE ANALYST PUBLISHING COMPANY is enabled to offer as a Premium to its readers. Having some large advertising contracts we have been enabled to procure the movements of the manufacture of the best known American watch factories, namely, the Waltham, Elgin, Hampden and Illinois Watch Companies. These movements are adapted for both ladies' and gentlemen's watches, and are warranted by the makers. These movements have seven jewels, patent lever movement, chronometer balance, patent safety pinion, sunk hard-enameled dial, straight line visible palette, stem winders, hand set; in fact, contain all the latest improvements and can be readily cleaned or repaired by any ordinary good watchmaker. They can be regulated to run as close as any movement.



It is needless to say that to case these movements in solid gold cases would make them too expensive, yet they are cased in what are known as gold filled or stiffened "Ladd" cases, and are warranted to be 14 karat gold, made from two sheets of 14 karat gold overlaying fine composition metal, with regular jointed caps, covers and bezels, and to wear at least five years. They are not plated, nor rolled gold, but actual 14 karat gold cases, thin of course, but stiffened and strengthened by being filled with this fine composition metal. They are finished in the same manner, engine turned and engraved as solid gold watches, and wear and look just the same. No one but an expert can tell them from a solid gold watch. These watches are made both open face and hunting case style, in gentlemen's or ladies' sizes. For gentlemen we recommend plain engine-turned cases; for ladies, a handsomely engraved case.

How to Obtain One of these Watches.

These watches are not to be purchased from us at any price. Send us a club of 25 subscribers to the AMERICAN ANALYST, and $25, the regular subscription price, and one of these watches (your choice of style and size) will be immediately forwarded, post-paid and registered, to your address. You need not wait until you have your 25 subscribers all together, but forward them as you get them and they will be credited to you, and when the number is complete the watch will be sent. A subscription for two or three years will be counted as two or three subscribers.

As these watches are retailed by jewelers at not less than $25, it will be seen that we are offering a real premium with the sole object of increasing our circulation, and that by taking advantage of our offer any one can obtain a good, reliable and handsome watch without cost. As the number of these watches at this price is limited, it is advisable to take steps at once to procure a bargain.

THE ANALYST PUBLISHING CO., 19 PARK PLACE, NEW YORK.

BICYCLES

GIVEN AWAY TO BOYS AND GIRLS!

AN OPPORTUNITY OPEN TO ALL.

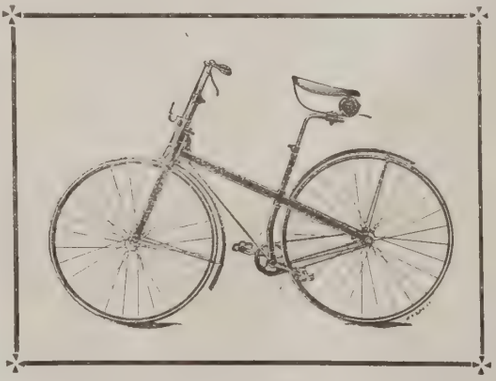
The Analyst Publishing Company being desirous of largely increasing their subscription list, will furnish every one with a beautiful Safety Bicycle, ABSOLUTELY FREE, in return for a few hours' canvassing.

To every boy and girl who secures 75 subscribers for the American Analyst at $75, we will give a splendid

$40.00

NONPAREIL

SAFETY BICYCLE.



These bicycles are adapted in size to boys, but are strong enough to carry a man. A boy's bicycle should be a strong one. They are manufactured by the OVERMAN WHEEL CO., the makers of the celebrated VICTOR Bicycle, and have the full guarantee of the makers.

The following is a brief description of the NONPAREIL SAFETY; 26-inch wheels; ball bearing all around, including pedals; solid crescent rims; double-tangent spokes; three-fourths inch tires; cranks, three throw, $4\frac{1}{4}$ to $5\frac{3}{4}$ inches; guards to both wheels; tool-bag, oiler and wrench. Finished in bright enamel, all exposed metal heavy nickel-plate on copper.

In selecting these machines as a premium, we have disregarded cheapness and selected a Bicycle which is serviceable, and the makers of which have an established reputation for building the best Bicycle that money, machinery and brains can produce. We are actually furnishing the Bicycles and Papers at less than cost, but hope by stimulating active and successful canvassing, and thus enlarging our subscription lists, to make an eventual profit. We positively guarantee these bicycles to be just as here represented. They will be shipped by express f. o. b. in New York.

Subscription orders must be made out plainly and legibly, and sent as fast as secured, addressed to

THE ANALYST PUBLISHING CO., 19 Park Place, New York.

ONE YEAR FREE.

If you will send us the addresses of Twenty-five Ladies in your neighborhood to whom we can send sample copies of the **AMERICAN ANALYST,** we will send this paper to you free for One Year; or, for Fifteen names, Six Months; or, for Ten names, Three Months. We do this because our past experience assures us that any lady who once becomes acquainted with the value of the **AMERICAN ANALYST,** continues to subscribe for it. We also offer valuable premiums for raising clubs.

HAMMOND'S

CELEBRATED

Calumet Oleomargarine

Strictly pure, cheap and healthful.

Ask your grocer for it.

Put up in packages of all sizes, also prints and rolls.

C. H. HAMMOND CO.,

607 to 615 THE ROOKERY,

CHICAGO.

Also offices at Boston, South Omaha, Neb., and Hammond, Ind.

We shall be glad to supply our readers with any periodical published at club rates.

Send us a postal naming periodical and we will quote you prices.

ANALYST PUBLISHING CO.,
19 Park Place,
New York.

HARTSHORN'S SELF-ACTING SHADE ROLLERS

NOTICE SCRIPT NAME OF *Stewart Hartshorn* ON LABEL, AND GET THE GENUINE HARTSHORN

GOLD MEDAL, PARIS 1878.



W. BAKER & Co.'s Breakfast Cocoa

from which the excess of oil has been removed,

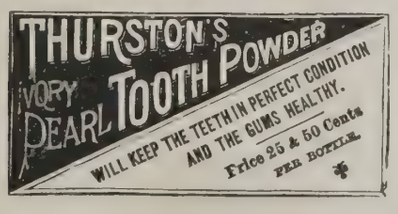
Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.



LADY AGENTS WANTED.

I have a medical specialty for ladies use, which is one of the best selling articles in the country. You can make a good income handling it, and at the same time be doing your sex a great benefit. Write me at once for full information and exclusive territory. If you wish a sample sent enclose 12 cents postage. Dr. H. H. Jackson, 103 State Street, Chicago.

DETECTIVE! WE WANT A MAN IN every **locality** to act as **Private Detective** under our instructions. Send stamp for particulars.

WASHINGTON DETECTIVE AGENCY,
Box 787. Washington, Iowa.

We can save you Fifty Dollars when you Build. See



A complete set of Plans to build from, simply state about price of dwelling desired. 25 cts. in stamps. Our book "Beautiful Homes." 25 cts. Our monthly book "The National Builder," 25 cts. Address

The National Builder, Adams Exp. Bldg., Chicago, Ill.

TEAS

REVOLUTION IN PRICES.

Direct from TEA GROWERS to TEA POT.

Finest Teas Imported.

Send in your orders at once. On $20 00 Tea and Baking Powder orders, we will allow you a **Complimentary,** in any kind o Tea you may select, equal to **25** per cent, and **Pay all Express Charges.** This is an unprecedented offer. Remember w are the **"Old Reliable,"** THE GREAT AMERICAN TEA COMPANY Established 1861. No discounts, No Premiums, No Panels.

PRICES OF TEAS & BAKING POWDER.

OOLONG,	30, 35, 40, 50, 60, best 65 cts. per lb.
MIXED,	30, 35, 40, 50, 60, best 65 " "
JAPAN,	35, 40, 50, 60 70, 80, best 90 " "
ENGLISH BREAKFAST,	35, 40, 50, 60. 70, 80, best 90 " "
YOUNG HYSON,	35, 40, 50, 60, 70, 80, best 90 " "
IMPERIAL,	35, 40, 50, 60, 70, 80 best 90 " "
GUNPOWDER,	50, 60, 70, 80, 90, best 1.00 "
BASKET FIRED JAPAN,	50, 60, 70, 80, best 90 " "
CONGOU ENGLISH BREAKFAST,	50, 70, best 90 " "
SOUCHONG " "	50, 70, best 90 " "
FORMOSA OOLONG,	50, best 65 " "
ORANGE PEKOE,	50, best 70 " "
ASSAM,	50, best 70 " "
BAKING POWDER, in One Pound Tin Cans,	45 cts. per can.
BAKING POWDER, in Half-pound Tin Cans,	25 " "

All goods warranted to give perfect satisfaction, or they can be returned and exchanged or money refunded, and all expenses paid by us.

THE GREAT AMERICAN TEA COMPANY,

— IMPORTERS, —

31 & 33 Vesey St., P. O. Box 289. New York.

N. B.—Only inducements are *Best Goods* at *Lowest Prices.*

PUBLICATIONS OF THE

ANALYST PUBLISHING CO.

THE AMERICAN ANALYST.
Weekly. Every Thursday. $1 per year.

THE ROOFER, TINNER AND SHEET-IRON WORKER.
Monthly. 15th each month, $1 per year.

THE LEATHER MANUFACTURER.
Monthly. 1st each month. $3 per year.

Reliable agents and representatives wanted everywhere on liberal terms. Address

ANALYST PUBLISHING CO.
19 PARK PLACE, NEW YORK.

"BILLET"

are

Carefully Selected French Sardines, Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,

HOWARD STREET, BOSTON, MASS.



We Can Save You—— Fifty Dollars When You Build. ✳

If you are thinking of building a home, here is an opportunity to secure one or several designs of houses which will aid you in deciding just what you want.

PLANS READY TO BUILD FROM

ONLY 25 CTS. EACH

Or Five Sets for One Dollar.

The designs given below to select from are practical and are drawn to a large scale by Geo. O. Garnsey, architect for THE NATIONAL BUILDER. Each one consists of a large, beautifully colored picture of a front elevation, including the floor plans, the details, the specifications, and carefully prepared estimates of cost, and all ready to build from. By a special premium arrangement we are enabled to sell these plans at the above extremely low price. **Specify number of Design.** Send all orders to

THE ANALYST PUBLISHING CO.,

No. 19 PARK PLACE, NEW YORK CITY.

No. 2. **Clover Cottage.** Neat, cosy and modern. Cost, $1,960.

No. 3. **6-Room Elegant Brick Residence.** Suitable for city or country; Handsome Front, Good Basement, etc. Cost, $3,500.

No. 4. **6-Room Modern Residence.** Handsome Front, with broad circular Veranda. Cost, $3,000.

No. 5. **Cheap 5-Room Genteel Cottage:** With Reception Hall, 9x12, and good Basement. Cost, $2,000.

No. 6. **8-Room Residence.** Handsome Front, neat Porch, etc. One of a series of residences much in demand. Cost, $3,000.

No. 10. **Bank and Store Fronts.** Showing different styles of Show Windows, and highly Ornamented Fronts. Two designs. Cost, $1,613 and $1,325.

No. 17. **Double City Flat Building.** Six rooms in each flat; building adapted to narrow lot. Ornamental, Romanesque Front. Cost, $10,000.

No. 19. **Queen Anne Cottage, Eight Rooms.** Good light; exhibiting good effect. Cost, $4,000.

No. 21. **Maplewood Cottage, Three Rooms.** Abundance of piazza. Very neat and convenient. Cost, $1,000.

No. 22. **Hyacinthe Cottage, Three Rooms.** Very odd and pleasing. Cost, $750.

No. 23. **Clovernook Cottage.** New in style. Cost, $750.

No. 25. **Eastlake Cottage, 8 Rooms.** Neat 2-story Frame. Cost, $1,875.

No. 26. **Rustic Stone Cottage, Six Rooms.** This design is handsome. Cost, $2,575.

No. 38. **Cheap City House, Eight Rooms.** Suited for inside lot; nicely laid out. Cost, $2,600.

No. 40. **Charming Suburban Cottage of Five Rooms.** Very roomy and convenient. Cost, $2,500.

No. 42. **Beautiful 6-Room Cottage.** Handsomely designed; all modern improvements. Cost, $3,100.

No. 49. **Neat Village Church.** Seating capacity about 600. Cost, $7,500.

No. 50. **Store and Office Building.** Brick; 2 stores and 8 offices; very handsome. Cost, $7,000.

No. 51. **Modern Suburban Residence of Nine Rooms.** Beautiful design. Cost, $2,100.

No. 57. **Rosedale Cottage, 3 Rooms.** With Bay Window, Frame. Cost, $1,000.



OUR GREAT OFFER

TO SUBSCRIBERS

TO THE

AMERICAN ANALYST.

We will send the **ENTIRE SET OF DICKENS' WORKS,** *in* **TWELVE VOLUMES,** *as here described, all postage prepaid by ourselves, also* **THE AMERICAN ANALYST** *for* **ONE YEAR,** *upon receipt of* **$1.50,** *which is only* **50** *cents more than the regular subscription price of this paper.* Our readers, therefore, practically get a set of Dickens' works in twelve volumes for only **50** cents. This is the grandest premium ever offered. Up to this time a set of Dickens' works has usually been $10.00 or more. Tell all your friends that they can get a set of Dickens' works in twelve volumes, with a year's subscription to **THE AMERICAN ANALYST** for only **$1.50.** Subscribe now and get this great premium. If your subscription has not yet expired, it will make no difference, for it will be extended one year from date of expiration. We will also give a set of Dickens', as above, free and post-paid, to any one sending us a club of three yearly subscribers.

ADDRESS:

THE ANALYST PUBLISHING CO.

No. 19 PARK PLACE,

NEW YORK.

TABASCO PEPPER SAUCE,

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced by connoisseurs to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY'S SON,

NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

NATRONA BI-CARBONATE OF SODA.

(ABSOLUTELY PURE.)

The nature of the raw material from which NATRONA BI-CARBONATE OF SODA is made—viz., kryolith, a mineral containing *pure sodium*—insures a purity and uniformity of product which cannot be obtained from any other known material. In making BI-CARB. SODA from any other raw material, the use of sulphuric acid is a necessity, but none is used in any part of the process of making NATRONA BI-CARB.; hence its entire freedom from the slightest trace of arsenic, which is always present in ordinary soda. I s absolute purity and entire freedom from all traces of *sulphate of soda*, common salt and other impurities, render NATRONA BI-CARB. NEARLY TASTELESS, and being bolted through the finest bolting-cloth, insures the finest stage of division.

To these indisputable facts the attention of CONSUMERS of soda is specially called. They are IMPORTANT, and should influence both those who use and those who sell soda, to buy and sell NONE BUT THE BEST.

The NATRONA BI-CARB. Soda is kept in stock by almost every wholesale druggist and grocer throughout the United States, of whom it may be ordered.

Natrona Bi-Carb. Soda is unequaled by any other brand of English or American Manufacture.

PENNA. SALT MANUFACTURING CO.,

NATRONA CHEMICAL WORKS. PHILADELPHIA, PA.

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

To Subscribers, Readers and Advertisers.

SUBSCRIBERS' attention is called to the great variety of interesting and instructive subjects treated in this number. We respectfully ask the co-operation of our subscribers in extending our Subscription list, which will enable us still further to increase the value of the AMERICAN ANALYST to them.

The CASUAL READER is specially requested to examine our liberal premium offer.

ADVERTISERS who do not know of this Journal already, are respectfully referred to article headed "A Business Benefit."

ALL are kindly requested to peruse this number thoroughly.

The AMERICAN ANALYST can be had at any news stand in the United States. Any newsdealer will take orders for it, the American News Company being our wholesale agents. All postmasters will receive subscriptions.



RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W ROBINSON & SON,
184 Greenwich St., N.Y.

INSTRUCTIONS TO SUBSCRIBERS.

The **Names of all Subscribers** are registered as soon as received, and paper is always promptly forwarded.

Postage.—The postage to all parts of the United States and Canada is paid by the publisher.

Remittances of small sums may be made with comparative safety in ordinary letters. Sums of one dollar or more must be sent by registered letter or P. O. money order, otherwise we cannot be responsible for same. Silver must not be sent in a letter.

Postage Stamps will be received for the fractional part of a dollar, and in any amount when it is impossible for patrons to procure bills, but you must send one or two-cent stamps only.

SUBSCRIPTIONS.—The AMERICAN ANALYST will be sent one year to any subscriber for ONE DOLLAR. New subscriptions can begin at any time.

We Stop the Paper at the expiration of the time paid for unless a renewal of subscription is received. Those whose subscriptions have expired must not expect to continue to receive the paper unless they send the money to pay for it.

Change of Address.—Subscribers wishing their addresses changed must invariably give their former as well as new address.

Missing Numbers.—It occasionally happens that numbers of our paper sent to subscribers are lost or stolen in the mails. In case you do not receive any number when due, write us a postal card and we will cheerfully forward a duplicate of the missing number.

Most Important of All.—In every letter that you write us, never fail to give your full address, plainly written—name, post-office, County and State.

Address all letters to

THE ANALYST PUBLISHING CO.,
19 Park Place, New York.



A HIGH-GRADE PIANO
AT A VERY MODERATE PRICE.
NEW DESIGNS. FANCY WOODS.
Terms Easy. ✣ Monthly Instalments.
TWO, THREE AND FOUR PEDALS.
Catalogues, Prices, Terms, Etc., sent to any address.
EVERY PIANO WARRANTED 5 YEARS.
(Mention this Paper.)

THE LABORATORY.

To Inventors, Manufacturers and Applicants for Patents

The AMERICAN ANALYST may be consulted upon all matters involving theoretical or applied chemistry. Advice and opinions given. Analyses and assays made. Patents perfected and secured. Terms reasonable.

Address, AMERICAN ANALYST,
19 Park Place, N. Y.

SWIFT'S
CHOICE
Chicago Dressed Beef
AND
MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,
UNION STOCK YARDS,
CHICAGO, ILLS.

THE ORIGINAL AND GENUINE
(WORCESTERSHIRE SAUCE).



LEA & PERRINS' SAUCE

In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—

Lea & Perrins

Beware of Imitations; see that you get Lea & Perrins'

For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS, NEW YORK.

GLENN'S
SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,
C. N. CRITTENTON,
115 FULTON STREET,
NEW YORK.

Be progressive and keep abreast of the times. Avoid dyspepsia by using **Lard Compound** and **Cottolene,** a substitute for lard.

The highest medical authorities pronounce them healthful; and expert cooks commend them.

Our **Clairette** brand of cotton oil soap is the purest and best laundry soap in the market; as pleasant to the hands as genuine castile.

N. K. FAIRBANK & CO.,
CHICAGO AND ST. LOUIS.

The Standard of Excellence.
KINGSFORD'S
OSWEGO
Pure and Silver Gloss



STARCH
KINGSFORD'S
OSWEGO CORN STARCH
FOR
Puddings, Custards, Blanc-Mange, Etc.
THE PERFECTION OF QUALITY.
WILL PLEASE YOU EVERY TIME.
Always ask your Grocer for these goods.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 30. NEW YORK, THURSDAY, JULY 23, 1891. WHOLE No. 230

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - $1 per year.
Single Copies, - - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.
Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.
Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,

H. LASSING, M. D., } *Editors.*
T. P. McELRATH, }

No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

A Parisian Dinner 353
Bread Chemistry 353
Domestic Dietetics 353
Earth Germs 351
Editorials 349
The Flooded Desert; An Important Suggestion; Inspecting American Meat.
Italian Cookery 352
Patres Patriae 350
Training for the Throne 351
Vegetarianism 354

THE FLOODED DESERT.

The mystery of the deluged desert in southern California, mentioned in our issue of July 9, has been solved. There seems to be no question that this water comes from the overflow of Colorado River, which, having worn away its western barrier at a certain point, is emptying a vast volume of water into the great basin of the desert, which is set down on all maps as being at the ocean's level and the bed of an ancient lake. The lowest level is reached at Salton, on the Yuma Division of the Southern Pacific railroad, about 150 miles southeast of Los Angeles. Salton is in a vast depression which lies 160 feet below the sea level, covering an estimated territory of three thousand square miles. While exploration of railroad men has given the public at a distance official information on the subject there has never been the slightest doubt in the minds of "old-timers" in the vicinity that the source of the lake was the Colorado River. They say that in 1850 there was a similar inundation, only that the water did not reach so high a point as at present. Major Powell, the director of the United States geological survey, and a frequent explorer of that region in earlier days, believed that the great river was the source before any exploration had been made. This great valley, extending all the way from the Mexican boundary north and northwest, is but a continuation of the valley of the Gulf of California, and is 140 miles long by 70 miles wide. It is also a well-established fact that ages ago the ocean or gulf extended inland a considerable distance, covering the entire territory which now forms the most desolate portion of the desert. The old beach line of this sea may be traced for many miles on the mountain sides, while the bones of whales, shells of salt-water fish and other evidences of marine life are abundant. Singularly enough, in some places the remains found are those of fresh water fish, showing that the basin has been filled at times with both salt and fresh water. The vast deposits of salt now being mined at Salton were undoubtedly produced by the evaporation of the salt water, and explain the fact that the waters of the new lake are very salt. What the effect of the permanent flooding of a large area of the desert would be upon the climate can only be conjectured. That it would be favorable is unquestioned. For many years it has been a favorite project among French scientists to flood large areas of the Sahara, with the design of so ameliorating the climate of the remainder as to make it fit for habitation of man. That such a result would follow has been indisputably proven. There would unquestionably follow a heavier rainfall; even the times of precipitation might change. Certainly the fierce wind currents caused by the tremendous evaporation in the burning waste would cease. The territory surrounding the body of water would experience a most grateful climatic revolution, and with the aid of irrigation would become fruitful. The only interests which could be affected at all disastrously, from present appearances, would be those of the railroads. Should the water continue to rise, and finally reach the sea level, it would be necessary for the railroad to take to the hills to the northward. There are ranges of mountains there along whose lower slopes a road could readily be built above high-water mark.

AN IMPORTANT SUGGESTION.

A description is given by the *Popular Science News* of a slight modification of the present system of weights and measures proposed by Mr. Hannssen, a Danish engineer, by which it can be converted into a true decimal system equally convenient for calculations with the French metric system now so extensively used. Such a scheme, if producible, would be of universal ability. It is described by our contemporary as follows: "Briefly stated, the foot is increased by about 1-2,500 of its present length, or the thickness of ordinary note paper—exactly from 1.0000 to 1.000403—while the pound avoirdupois, the ounce, and the imperial gallon remained unaltered. By this very slight alteration of the length of the foot, which hardly will be noticed in trade, manufacture and commerce, the present system of standards is at once converted into a decimal system. While the present cubic foot only contains 436.971.78 grains of distilled water, the new standard cubic foot would contain exactly 1.000 ounces (437,500 grains) of distilled water of 4 deg. C. temperature; 16 cubic feet consequently will be equal to 100 gallons (called 1 hectogallon), and 1 hectogallon of distilled water of 4 deg. C. weighs 1,000 pounds. The new standard foot will be divided into deci-, centi- and milli-foot; and all the other units of weight and measure are correspondingly simplified. The new system is described very fully in a recent number of the *Chemical News*, and Mr. Hannssen has certainly hit upon some very curious and remarkable relations between our present standards of weight and measure, The difficulty experienced in introducting the metric system into general use shows how hard it is to make any change in this direction; but the slight actual alteration from existing standards required by this system, and the great ease and simplicity introduced by it into all calculations, may serve to render it more popular and generally acceptable if further discussions of the subject show no other objection to its general adoption.

INSPECTING AMERICAN MEAT.

The effect of the new meat inspection law is already apparent in the increasing demand for American meat products for the European market, and the indications are favorable for a speedy removal of the restrictions which have so seriously crippled our export trade in those commodities. Secretary Rusk, of the Department of Agriculture, and Dr. Salmon, Chief of the Bureau of Animal Industry, put the inspection work under the new law on a solid basis during a visit last month to Chicago. The inspection of beef carcasses has already been going on to some extent at New York, Chicago, Omaha and Kansas City, but the microscopic inspection of hog products only began on June 22d, after the Secretary and Dr. Salmon had organized the work according to scientific methods. This inspection will be carried on for the present only at Chicago, where the force is sufficient to inspect 600 hogs daily. A force of some thirty persons has been appointed, with salaries ranging from $1,000 to $1,800 for the microscopists, and smaller pay for young men and girls who affix labels and do other mechanical work. The chief microscopist is a person of scientific training, but such training is not thought necessary for all the inspectors, as they are soon able to learn the use of the microscope and to detect trichinæ where they are present. The cost of the inspection per animal will range somewhere between five and ten cents. The Depart-

ment of Agriculture has not yet undertaken to enforce strictly the provision of the law of March 3, 1891, that meats shall not be exported which have not been inspected. The enforcement of this provision at present would limit the export trade in hog products to Chicago, because no inspection force has yet been set at work at other points. If the experiment succeeds well at Chicago and the appropriation permits, inspectors will be appointed at other places. For the present the exportation of meats which have not been inspected is not interfered with, but it is not likely to be large, because none but the inspected meats find a ready market on the other side of the ocean. The appropriation made for the Bureau of Animal Industry for the coming year was made before the new inspection law was passed, and will not permit a great extension of the service. The appropriation will probably be increased by the next Congress, with its large membership especially favorable to the farming interest, if the new law has the intended effect of increasing our export trade in beef and hog products. The total appropriation for the Bureau for the coming fiscal year is $500,000, an increase of about $50,000 over the amount available for the year just closing. The advices received by the State Department indicate that France and Germany will remove their restrictions upon the importation of our meat products about October 1st. It is believed that the inspection law will be in full force by that time.

PATRES PATRIÆ.

WHO WERE THE FATHERS OF THE REPUBLIC?

We reprint the subjoined bit of national history from the columns of the *Illustrated Christian Weekly* as a wholesome and instructive reminder of some of our illustrious predecessors of revolutionary times: "The Declaration of Independence is probably the most important event in the annals of our country. It is one of the great events in the history of the world. The men who were the actors on this occasion, whose names are appended to the immortal document, have been called the 'Fathers of the Republic.' Some of these men were raised to fame by the mere fact that they were signers of our Magna Charta; but the greater number of them were leading men of the colonies, and took a prominent part in the events that followed. A few facts relative to the event and to the illustrious body of men who imperilled their lives and fortunes by attaching their signatures to that instrument, which established our national independence, may be of interest before we refer particularly to the more prominent actors. The United States, then comprising the American colonies, were represented in the assemblage that passed that measure by fifty-eight members. The President, John Hancock, was the only one, however, who signed the document on the 4th of July, 1776. On the second day of August it was signed by all but one of the fifty-six of the signers whose names are appended to it. The other, who was Matthew Thornton, of New Hampshire, attached his signature in November. Henry Wisner, one of the New York delegation, was present when Congress expressed its approbation of the Declaration, and voted in favor of it; but before the engrossed copy was signed by the several members Mr. Wisner left Congress, and thus failed of affixing his name to this memorable paper. Another member of the New York delegation who missed affixing his name to the historical document was Robert R. Livingston, who was prevented from signing that instrument by an enforced absence from Philadelphia. When the vote was taken upon the question, it was recommended to begin with the northernmost colony. Dr. Josiah Bartlett, of New Hampshire, therefore, had the honor of being called upon for an expression of his opinion, and of first giving his vote in favor of the resolution. He was also the first to affix his signature after Hancock. Hancock's is the handsomest and boldest of all the signatures attached to the Declaration; the others look weak and cramped beside it. But not one was written with a trembling hand except Stephen Hopkins's, of Rhode Island, and it was not fear that made him tremble, but the palsy, from which he was a sufferer. Charles Carroll was the only member who added his place of residence, and the reason of his doing this was somewhat peculiar. When Carroll was signing, some one near him remarked, 'There are several of your name, and if we are unsuccessful they will not know who to arrest.' 'Not so,' replied the Maryland millionaire, and immediately added, 'of Carrollton.' He lived to see all the memorable men with whom he acted on that eventful day pass away, and enjoyed the prosperity of his country until 1832, when he died at the advanced age of 95 years. The larger number of the signers were comparatively young men, for the average of all was 43 years and 10 months. Edward Rutledge, of South Carolina, was the youngest of the fifty-six, being only 27. The Nestor of the body was Benjamin Franklin, of Pennsylvania, who was 70. The most opulent was Charles Carroll, who was considered the wealthiest untitled man in the colonies. Robert Morris, of Pennsylvania, came next, and then probably John Hancock. Samuel Adams, of Massachusetts, was the poorest, his impoverished condition being well known. The others were all in easy circumstances. There were five physicians among the signers. Thirty of them were lawyers, seven were farmers, eight were merchants, two were mechanics, one was a clergyman, John Witherspoon, of New Jersey. Abraham Clark, of New Jersey, was a surveyor; Roger Sherman, of Connecticut, was a shoemaker, and Franklin boasted of being a printer. With the exception of eight, all the signers were natives of American soil; of these two—Robert Morris and Button Gwinnett, of Georgia—were born in England; Matthew Thornton, of New Hampshire, and James Smith and George Taylor, of Pennsylvania, were born in Ireland; John Witherspoon and James Wilson, of Pennsylvania, were born in Scotland, and Francis Lewis, of New York, was born in Wales. If we could have been in Independence Hall on those warm days of June and July, 1776, we should have seen half a dozen men or more who stood above their compeers in the part they took and the notice that was accorded them. First of all there was the President, John Hancock, of Massachusetts, who sat in a large high-back chair, behind the heavy mahogany table, and the great silver inkstand—a middle-sized, courtly looking man, with a ruddy face, which gave him the name of 'Rosy John' among his Tory enemies—and dressed in black velvet breeches and a scarlet coat with a great deal of gold embroidery about it. Mr. Hancock was favored by being one of the three men, with Samuel Adams and Benjamin Franklin, excluded by the King of Great Britain from the general pardon which was offered the American people if they would lay aside their arms. He had a princely fortune, and expended liberally of his means in the cause of freedom. He remained President of Congress till October, 1777, when he resigned in consequence of ill health. In 1780 he was elected the first Governor of Massachusetts, and was annually elected to that office, excepting an interval of two years when he refused to serve, until the year of his death, which occurred in 1793, when he was 55 years old. After the President, the most noticeable members were the five men who constituted the committee appointed to prepare the Declaration. They were Thomas Jefferson, of Virginia; John Adams, of Massachusetts; Benjamin Franklin, Roger Sherman and Robert R. Livingston, of New York. Thomas Jefferson was one of the youngest of the signers. At the time he drafted the immortal Declaration he was only 32 years old. He had the best classical education of any public man of his day, and was probably the best fitted for this particular work. As a composition the Declaration is Mr. Jefferson's. It is the production of his mind, and the high honor of it belongs to him clearly and absolutely. Jefferson's personal appearance was prepossessing and commanding. He was very tall and rather large boned, with light blue eyes and sandy hair. At a later day he was noted for his republican simplicity of dress, but at this time he was one of the finest dressed gentlemen in the colonies. In his long-waisted white cloth coat, scarlet vest and breeches and white silk hose, Thomas Jefferson must have been one of the most striking figures of that assembly. With his subsequent career all of our readers are familiar. Suffice it to say that before he was President he had been repeatedly Governor of Virginia, Commissioner and Minister to France, Secretary of State and Vice-President. He died on July 4, 1826. Of his colleagues Dr. Franklin was, beyond all others, the most celebrated. He had won European fame on account of his philosophical and scientific investigation. His superior attainments, his reputation and his venerable age, made him one of the most influential members of Congress. In stature Franklin was above the middle size and of full flesh. His long buff coat and embroidered silk vest were almost as familiar to his contemporaries as was his serene, benevolent face. For several years after the declaration of independence Dr. Franklin did excellent service for his country as Commissioner to France, Governor of Pennsylvania, and delegate to the Constitutional Convention. He withdrew from public life in 1789, and died the following year at his home in Philadelphia. John Adams, who was second on the committee, was one of the most prominent of the fathers of '76. Short in stature, pompous in manner, choleric, always puffing and blowing, his abilities atoned for a host of faults, and won him the highest gifts in the hands of his countrymen. While Jefferson was the author of the Declaration itself, John Adams was its great supporter on the floor of Congress. This was the testimony of Jefferson himself, who termed him 'our collossus in debate.' Adams afterwards represented the United States at the Hague and at the Court of St. James. He was Vice-President two terms and President for one, at the close of which he retired to private life. He died the same day with Jefferson, aged 81 years. Roger Sherman began life as a shoemaker. It is recorded of him that he early evinced an uncommon thirst for knowledge, and was wont, even while at work in his seat, to have a book open before him, upon which he would employ every moment not necessarily devoted to the duties of his calling. He was 55 years old when he signed the Declaration, and he lived to be a Representative to the National Congress, delegate to the Constitutional Convention, and Senator of the United States. He was a man of great natural sagacity, unbending integrity and force of character. He died at New Haven in 1793. Less is generally known of Robert R. Livingston than of many really less able men. A member of the great patroon family of the Livingstons, his ability and influential connections secured for him, before he was 30 years old, the appointment of delegate to the second Continental Congress. His influence in that body was second to none. The fact that the representative of the most powerful family in the colonies, a man who had everything to lose and little to gain from a successful revolution, gave his hearty approval to so radical a measure, won for that act the votes of members whom the graceful pen of Jefferson or the eloquent speech of Adams could not influence. Livingston subsequently became the first Chancellor of the State of New York, and as such he gave the oath of office to President Washington. He was a delegate to the convention that ratified the Constitution, and served as Minister to France under Jefferson. He was the great patron of Robert Fulton, and the first steamboat on the Hudson was named after his country estate, the Clermont. He died in 1813. One other individual must be named without whom there might not have been a Declaration at all. This is Richard Henry Lee, of Virginia. He it was who started the ball a-rolling on the 7th of June, 1776, by the following resolution:

'That these united colonies are, and of right ought to be, free and independent States; that they are absolved from all allegiance to the British crown, and that all political connection between them and the State of Great Britain is and ought to be totally dissolved.' As the mover of the original resolution for independence, it would, according to parliamentary usage, have devolved upon Mr. Lee to have been appointed chairman of the committee selected to prepare a declaration, and, as chairman, to have furnished that important document. Mr. Lee, however, was called away by illness in his family, and in his absence Mr. Jefferson was elected to that honor, by whom it was drawn up with singular energy of style and argument. Mr. Lee subsequently served in several Congresses, and later was elected the first Senator from Virginia. He died in 1794, aged 62 years."

EARTH GERMS.

THE PREVALENCE OF MICROBES IN THE SOIL.

Much has been written about the microbes in the air, in water, in the human system. Less than they deserve has been said of the organisms which people another element not less important, the soil. Does the soil contain micro-organisms? The answer is not doubtful. The smallest quantity of earth put in water reveals, through the microscope, besides the organic and mineral matter a mass of beings more or less complex, moving more or less rapidly. A German author, Mr. Reimers, has calculated that every cubic centimetre of earth may contain several million germs. Among these microbes some have not been studied, and the part they play in the economy of life is not known to us, while certain others have functions which have been well determined. The experiments of Messrs. Dehérain and Maquenne have clearly revealed butyric fermentation caused by microbes in the soil. Besides the microbes provoking this sort of fermentation there exist also in the soil pathogenous microbes, which may be very dangerous under certain circumstances. In the first rank of these microscopic but maleficent beings must be cited the germs of carbuncle, of septicæmia, of tetanus, and of typhoid fever. Carbuncle, the etiology of which has been studied so thoroughly by Mr. Pasteur and his co-workers, Messrs. Chamberland and Roux, is one of the most terrible maladies which can attack cattle and sometimes even men. Nowadays, thanks to labors of the *savans* whom we have just named, this malady has become quite rare, and tends more and more to disappear. For a long time it has been known that carbuncle was due to a particular microbe, but it was not known how it could be propagated. Mr. Pasteur has demonstrated that this propagation was due, in part at least, to the longevity of the germs. Thus it is that if you bury the dead body of an animal which has died of carbuncle in a ditch one or two metres deep, and cover it with earth, the carbuncle bacteria will be found in the neighboring soil several years after the interment. We can understand then that cattle put to graze on this land, or fed by provender from it, can contract the disease. So when the cause of this malady was unknown, superstitious country people called these places "cursed fields." It may excite astonishment that the earth is such a powerful filter, allowing germs to rise to the surface of the soil. Mr. Pasteur has shown that this action is due to earth worms, which are thus the vehicle of carbuncular ferment. In fact, the bacteria of carbuncle are found in the little cylinders of fine earth which the worms bring to the surface of the soil, and which rain lays flat. Great care, then, should be used not to inter animals which have died of carbuncle in a soil on which sheep are expected to graze, or from which it is intended to harvest food for cattle. In order to avoid the propagation of germs, while getting rid of the dead bodies of animals which have died of carbuncle, they should be interred in ground which is either sandy or calcareous, which has little moisture, and in which earth worms cannot live. A better way, however, as Mr. Aimé Girard has pointed out, is to treat the dead body of the animal with sulphuric acid, which shortly turns it into a black pulp, which can be mixed with manure, as, for example, with phosphates, to be spread over the surface of the soil. Cultivated land contains, besides the microbe of septicæmia of Mr. Pasteur, the bacillus of tetanus of Mr. Nicolaïer. Mr. Verneuil has proved that inoculations made with this poisonous earth develop among animals the two terrible maladies of gangrenous septicæmia and tetanus. Mr. Macé has shown, in an analogous way, that earth contains the bacillus of typhus fever. The fact that the soil contains pathogenous microbes is utilized by the savages of the New Hebrides to poison their arrows. As we have seen, earth contains a great number of microscopic beings, of which some are dangerous and many are imperfectly known. Now, when earth is dried and gives to the wind a great quantity of dust, it may be asked if, among this dried earth thus suspended in the atmosphere, there are not germs capable of producing maladies like those we have mentioned. Although this question has not yet been studied, it would appear, from several examples, that these germs may become nearly inoffensive. It is known that a great quantity of water from the sewers of Paris is poured on the peninsula of Gennevilliers, which is thus transformed into a fertile garden. It is certain that the sewer water contains an incalculable number of microbes, of which many are the germs of terrible maladies, such as cholera and typhoid fever. An immense quantity of this sewer water is poured on the soil of Gennevilliers, and it may be imagined what an enormous number of micro-organisms there must be on the surface of the land. If the fears that may be entertained of the propagation of maladies were well founded, there would be a marked increase of mortality among the inhabitants of the land of Gennevilliers; but the sod of this peninsula has been treated with sewer water for the last twenty years, and there has been no increase in the number of deaths. Thus, while the question is far from being settled, it may be believed that the microbes, when deposited on the surface of the soil, and then carried away in a dry state by the wind, are not dangeous. Besides the beings I have mentioned, earth contains other bacteria, of which the function is quite different, and which play a very important part, from the point of view of vegetable physiology. Mr. Berthelot has demonstrated by a great number of experiments that earth can fix the atmospheric azote, through the intervention of certain micro-organisms. Some time since Mr. Breal published a study on the bacteria of the *leguminosæ* which have this property of assimilating the azote of the air. Finally, the soil contains the nitre-making microbe, in regard to which some new and very interesting experiments have recently been made.

TRAINING FOR THE THRONE.

HOW THE EMPEROR OF GERMANY WAS TAUGHT MILITARY SCIENCE.

The athletic development of Emperor William II. of Germany began in his seventh year. Two years later six-year-old Prince Henry joined him in his exercise. The two young Hohenzollerns received together all sorts of drill in clubs, dumb bells, apparatus turning, fencing and swimming from 1868 till 1875. The indoor and out-door gymnasiums were in the park of the New Palace in Potsdam. Three ships' masts were erected nearby, and to them were made fast all the usual rigging, after the model of the royal ship Hela at Danzig. The ground was ploughed round these masts, and nets were stretched so as to moderate the dangers of princely falls. Here the present Emperor received, under a naval officer, daily drill in the management of a ship's running and standing gear. Between the mock ship and the open place for gymnastic games there was a target for practice in sharpshooting, and, a few yards from it a bit of greensward for fencing bouts. A wide piece of undulating land, with a little underbrush and a few trees on it, was used exclusively for object lessons in the construction of breastworks, trenches, and for the illustration of other problems of military fortification. Prince William excelled in fencing and swimming. After two years of instruction he could swim for an hour without resting. On the small field of battle near the New Palace he and his royal companion and several cadets constructed a little wooden fortress, surrounded by deep ditches and armed with tiny cannon which fired blank cartridges. Throughout the summer this fortress was stormed daily under the leadership of the little Prince, was forced to silence, and the French flag on its walls was torn down by small royal hands and was replaced with the Prussian colors. Upon the withdrawing of the garrison Prince William led his cadets in pursuit through the length and breadth of the park. He went into camp with them at the end of every hour's march, helped them set up tents, build fires, and cook coffee and potatoes over the coals. Pickets were stationed, scouts were sent out, and sometimes earthworks were thrown up. At five o'clock in the afternoon Castle Lindstedt was stormed, and all sorts of sweets were carried off as the booty of the conquerors. Finally the little army of cadets, led by Prince William, and the fleeing garrison, under Prince Henry, arranged an armistice to last till the following day, and all the young soldiers marched back to the New Palace to be reviewed by the Crown Prince and Crown Princess.

SACCHARIN TABOOED.—The Russian Medical Council follows the example set by Italy and France and prohibits the use of saccharin in articles of food, and drink.

CONTAGION SCREEN.—In the children's hospital in Paris, Dr. Grancher, in order to prevent house infection, surrounds each bed containing a case suspected of being contagious with a screen to prevent personal contact. He assumes that the danger of infection through the air is not great.

OBVIOUS MORAL.—There is a man in our town, and he is wondrous wise; whene'er he writes the printer man, he dotteth all his i's. And when he's dotted all of them, with great sang froid and ease, he punctuates each paragraph, and crosses all his t's. Upon one side alone he writes, and never rolls his leaves; and from the man of ink a smile, and mark "insert" receives. And when a question he doth ask (taught wisely he had been), he doth the good penny stamp, for postage back, put in.

IMPORTANT DISTINCTION.—Sanitarium and sanitorium are words often used synonymously, but really of different, though allied meanings. Sanitarium is derived from the Latin *sanitas*, healthy, and means a place of health, a health retreat, a spot where correct sanitary conditions prevail. Sanitorium is derived from the low or late Latin sanitorius, which in turn comes from the Latin *sano*, *sanare*, to heal, and means a place of healing, a curative retreat, a spot where active health-restoring conditions prevail. The former, in brief, is hygienic or prophylactic; the latter therapeutic. The same distinction is to be observed between sanitary and sanitory.

FRENCH SYSTEM.—The town of Carcassone in France was recently condemned by the Civil Tribunal to pay indemnities of 100 francs and 50 francs to two of its inhabitants in respect of damages they had sustained by illness caused by eating mushrooms purchased in the public market. The grounds of the decision were that persons buying mushrooms had a right to expect that their innocuous quality had been verified by the inspector of markets before they were publicly exposed for sale, and that this official having neglected his duty, the municipality was liable for the consequences of such neglect. They certainly do manage some things better in France than in some other countries, where *caveat emptor* is the "custom of the trade" in nearly everything relating to food and drink. —*British Medical Journal.*

ITALIAN COOKERY.

SOME OF THE FAMOUS DISHES OF SUNNY ITALY.

On the general principle that culinary tradition is about the most unchanging of all our inheritances, we should expect to find Italian kitchen methods of to-day to have a general resemblance to those described for us by the classic writers of Rome. There is a resemblance, but it is not very close, and for this reason, probably, these old writers were denouncing the epicurian excesses of voluptuaries, and not describing the frugal meals of plain men. Juvenal, Horace, and Martial were satirists, not editors of cookery books, and the "dish of flamingoes' tongues" alluded to by Martial, the "livers of capons stewed in milk," as described by Pliny, were certainly never national dishes, not even such as frequently graced the board of the modest burgess. Nevertheless, the Italian of to-day lives upon many of the dishes that his Roman ancestor cooked and ate; and what is curious, as showing the conservatism of the affairs of the kitchen and the dining-room, the ordering of a set dinner itself, the sequence of courses, the arrangement of the *menu*, in short, derives through the mediæval Italian direct from classical times, and is now adopted throughout the civilized world. The Romans used the phrase—*Ab ovo usque ad mala*—from preliminary *hors d'œuvre* to dessert—to signify a complete dinner, and the interval was filled with fish, *entrees*, roast meats, game, and sweet things, in the order in which the civilized dinners are served. The Italians of to-day inherit from their ancestors the use as food of olives pickled, raisins of the sun, almond cakes, hard cheeses, open tarts (*scriblitae*), becaficos, mushrooms of many kinds, sausages, and oysters, all of which they have made common to the rest of the world. The Romans committed what we must consider the enormity of eating dormice, and even of esteeming them highly; but the dormouse of Italy is not the tiny beast of our English woods, but a larger and fatter creature of a different species, and in some parts of Italy it is cooked and eaten to this day, though I do not know that the fashion extends beyond the Peninsula. If we have nothing in the shape of a classical recipe book, but only inventories of ancient Roman dishes, and *catalogues raisonnees*, so to say, of great feasts, we have other grounds for knowing how little after all modern Italians have departed from the cooking methods of their forefathers. In our museums are to be found the very frying-pans, spits, saucepans, baking tins, cullenders, table knives and spoons used in Italy 1900 years ago. They are incidental with those we still use, so that we may safely conjecture, without other grounds to go upon, that the dishes they resulted in were not far different from those we eat to-day. In the so-called house of Pansa at Pompeii is to be seen a cooking-stove, for stews, of quite modern pattern. On the hot plate in front of it lie, just as the Pompeiian cooks left them, a kitchen knife of the ordinary sort and size, and one of those frying pans with divisions, for poaching eggs, which modern conceit supposes he has invented within a generation. Italian cookery, as shown in the following recipes, is, in the main, the ancient Roman cookery, with such reforms and additions as 1900 years have taught one of the most ingenious people in the world. They have invented macaroni and spaghetti: and polenta has come to them with the discovery of maize. Modern Italians still make the characteristic sweet-sour sauce (*agro-dolce*) in which their forefathers stewed the haunches of the wild boar. On the other hand, they have lost the secret of the most famous sauce of antiquity, the *Garum*, and though, on the revival of ancient learning, Rabelais boasted that he had rediscovered the recipe for making this celebrated condiment, his recipe is no more than a literary one, and has not found its way into practical cookery books.

ITALIAN DISHES.

MINESTRONE (SOUP).—Take every kind of vegetable, cabbage, carrots, turnips, spinach, etc, wash them and cut them in pieces about the size of a nut. Pound together a clove of garlic, some parsley, and some leaves of thyme, until they make a paste; add salt and pepper to this, mix it with the vegetables, and put all into a saucepan with sufficient stock or water for the quantity of soup required. When half-cooked, add some macaroni and a good quantity of Parmesan cheese. If preferred, the cheese can be served separately.

ZUPPA AL BRODO DI PESCE (FISH BROTH).—Fry lightly in a saucepan with butter and oil in equal parts, an onion, a carrot, some celery, and a little parsley, all well pounded. Put in this mixture any chosen fish, suitable for making a broth, adding salt to taste. Let the fish brown a little, then put in some tomatoes cut in pieces, some dried mushrooms cut up very fine, and by degrees pour in as much boiling water as the quantity of soup required. When the fish is thoroughly cooked and almost in shreds, take the saucepan off the fire and let it cool a little; then strain the broth and pass through a sieve the remains of fish, etc., in the saucepan; put this into the broth already strained and put it on the fire to boil another half hour. Add some toasted bread cut in dice, and serve grated Parmesan cheese with the soup.

POLLO CON FORMAGGIO (FOWL WITH CHEESE).—Truss and flatten a young chicken and slightly cook it in a saucepan with some butter, and then moisten it with a wineglassful of light white wine and the same quantity of stock or broth; add a bunch of mixed herbs, salt and pepper, and cook it for an hour over a very slow fire without letting it boil. Then take the chicken out of the saucepan and thicken the sauce with a piece of butter the size of a walnut, worked up with flour. Take the hot dish on which the chicken is to be served and pour on it a portion of the sauce and mix with it a good spoonful of grated cheese. Dish up the chicken and pour over it the rest of the sauce with the same quantity of cheese; then put it in the oven till it is slightly browned and the sauce is completely absorbed.

FRITTURA MISTA (MIXED FRY).—Daily in Italy a dish is served as an *entree* composed of various meats, fish, and vegetables delicately fried. Calf's and chicken's livers cut in thin small slices are the usual basis of the fry, to which are added neatly trimmed veal cutlets, brains, mussels, oysters, the yolks of hard-boiled eggs, artichokes, cauliflowers, and any other vegetable that is fancied. Prepare these various ingredients by blanching the brains, washing the vegetables, and cutting them in neat, not too small, pieces. Then dip the brains and the veal cutlets into the yolk of an egg, well beaten, and again into fine bread-crumbs seasoned with pepper and salt, ready for frying. The slices of liver, fish, vegetables, and other ingredients must be simply dipped in flour already seasoned, and then all must be fried in boiling fat, putting in first the veal cutlets and those ingredients which take longest to cook. Carefully drain from fat the pieces of meat, etc., arranging them on a hot dish, the cutlets or larger pieces in the centre. Serve very hot.

POMI DI TERRA ALL' ITALIANA (POTATO BALLS WITH CHEESE).—Boil some potatoes in salted water; when quite cooked, after removing the skins, throw them into a pan and cover them with grated Parmesan cheese, stirring all well together. Form the mixture into balls about the size of potatoes and dip them into white of egg, and then into flour. Fry them until they are crisp and of a pale gold color, drain them carefully from fat, sprinkle them with a little salt, and serve quite hot.

FUNGHI CON ERBE FINE (MUSHROOMS WITH FINE HERBS).—Cut some large, fresh mushrooms in half, wash and drain them, then place them for two hours in oil, salt, pepper and a little garlic. Fry them in butter, with parsley and chopped onions. Put them in a fire-proof dish, moisten them with a little oil, sprinkle them with bread-crumbs, and heat them over a gentle fire. When quite hot squeeze a little lemon juice over them and serve.

RAVIOLI.—Prepare a paste with flour, eggs, and a pinch of salt. Have ready some forcemeat made from cooked fish, meat or poultry, mixed with fine herbs and lemon peel chopped very fine. Roll the paste until it is as thin as parchment, cut into circular pieces three or four inches in diameter; place on each a portion of the forcemeat, then double the paste and pinch the edges together. Place the Ravioli in a deep fire-proof dish, pour some stock over them, and powder them with grated Parmesan cheese. Put them in the oven for twenty or thirty minutes, and serve them very hot in the dish in which they have been baked.

RISOTTO A LA MILANAISE.—For six persons, take half a pound of rice, well washed and perfectly dried. Put it into a stewpan with half a pint of good stock and a quarter pound of butter, a little pepper and a little salt. Let it cook gently, stirring it constantly with a wooden spoon until it is just tender, leaving each grain whole. The stock and butter should be absorbed by the rice. Add a little powdered saffron while the rice is stewing, and just before it is quite cooked add about two tablespoonfuls of grated Parmesan cheese. If preferred, a teacupful of fresh tomato sauce can be added instead of the saffron. It must be served very hot.

RISO E PISELLI (RICE AND GREEN PEAS).—For six persons, take half a pound of Italian rice, well washed and dried. Put it into a stewpan with a quarter of a pound of butter, stirring it until it is of a bright golden color, but great care must be taken not to burn it. Then add a teacupful of good stock with half a pint of fresh green peas, stirring the whole together till the rice and peas are tender; add salt and pepper to taste, and serve hot. The rice must always be in grains.

TAGLIATELLI.—Make a paste of flour, water, and one or two eggs, according to the quantity required. When the paste is thoroughly well kneaded, roll it to the thinness of a wafer biscuit, and cut it into long strips a quarter of an inch wide, or into fancy shapes with a paste-cutter. Dress these strips in the same way as macaroni, throwing them first into boiling water and letting them boil for some minutes. Take them out and put them into cold water, and drain them carefully on a sieve. Then place on a dish some butter and some grated Parmesan or Gruyère cheese, a layer of *Tagliatelli* seasoned with pepper, another layer of butter and cheese, and so on till all is used. Pour over the whole a cupful of rich cream, then add a layer of cheese, and cook in a moderate oven.

MACCHERONI (MACARONI).—Put a bunch of sweet herbs, half an onion, two cloves, three ounces of lean ham, one pound of lean beef, half a chicken, and a truffle into a stewpan with a good piece of butter, and brown them to the color of a hazel-nut; then add a quart of water, and boil down till reduced to about a tumbler of stock. Remove the meat and skim all the fat off. Boil in water one pound of macaroni, drain it well, and throw it into the saucepan containing the stock, with six ounces of butter and one ounce of Parmesan cheese. Stir well over the fire and serve very hot.

POLENTA CON CREMA (MAIZE PORRIDGE WITH CREAM).—Put into a rather large saucepan filled with boiling water, slightly salted, about two pounds of Indian corn flour, and stir it continually with a porridge stick. As soon as the *Polenta* is cooked, which may be known by the holes formed in the middle by the flour in boiling, turn it from the saucepan on to a board, where it must be allowed to cool. Now take another saucepan, which must be lightly buttered all over inside and sprinkled with bread-crumbs or flour. Raise the *Polenta* from the board very delicately with a large knife and put it into the saucepan, covering the bottom and sides. The remainder must be cut in thin, fine slices, of which layers are formed on the paste in the saucepan alternately with butter and grated Gruyère cheese, first pouring over each layer of *Polenta*

some thick cream. When it is all used, place it in a moderate oven for half an hour, when it will be ready for serving. Turn it very gently from the saucepan on to a hot dish, keeping the crust underneath. This is an excellent dish.

ZABAJONE OR SABAIONE.—This is a frothy mixture composed of wine, yolks of eggs, and sugar, thickened on the fire. The wine generally used is old Cyprus or Madeira; or two different kinds, one sweet and the other dry, may be mixed together, such as Malaga and Marsala. The ingredients should be in the following proportions: The yolks of three eggs to each person, a good teaspoonful of sugar to every egg, and as much wine as the shells of the eggs will contain. Beat up the eggs and sugar with a little powdered cinnamon, add the wine, and put the mixture in a saucepan on a brisk fire. Stir it without intermission until it has thickened, but do not allow it to boil. Serve hot, either in custard cups, when it may be eaten with cake or sweet biscuit, or it is excellent as sauce over any light pudding.

A PARISIAN DINNER.

ANOTHER PLACE THAT NEEDS A PURE FOOD "HEALTHERY."

According to *Le Cosmos* the following is the agreeable *menu* of a Parisian dinner:

As aperitive, a vermouth, which is rendered agreeable by the addition of sulphuric acid.

The diner then attacks his potage of tapioca—made of potato starch to which copper has been added.

His butter is made of calf's fat colored with lead.

His roast, of inferior quality, has been improved with saltpetre; he discovers a few truffles made of pressed clay.

The vinegar of the salad is seasoned with vitriol.

The peas—a little too green—taste of the copper which has given them their color.

Dessert: A chocolate cream; the chocolate is made of glucose, red oxide of mercury and red ochre.

For coffee he is given a mixture made of horse-liver roasted in the oven, black walnut sawdust, and caramel.

His small glass of kirschwasser, which terminates the dinner, contains as high as twenty-two centigrammes of prussic acid to the litre.

After such a meal the Parisian has a terrible thirst; he wishes to drink beer, and he drinks it. It is a decoction of poppy-heads, elder, belladonna, datura stramonium, soda, tan-bark and picric acid!

DOMESTIC DIETETICS.

SPECIALLY PREPARED FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

July.

MEAT.—Beef, lamb, mutton, ham, kidneys, liver, sausage, veal.

GAME AND POULTRY.—Pigeon, chicken, duck.

FISH.—Anchovy, bass, bluefish, blackfish, cod, eels, clams, flounder, haddock, halibut, herring, lobsters, mackerel, mussels, perch, porgie, prawn, salmon, shad, turtle, trout, sturgeon, whiting, weak-fish.

VEGETABLES. — Beans, cucumbers, carrots, cauliflower, egg-plant, lettuce, onions, parsley, parsnips, potatoes, shallots, spinach, turnips, radish, rhubarb, corn, beets.

FRUITS.—Cherries, strawberries, raspberries, huckleberries, melons, gooseberries, blackberries, peaches, pears, tamarinds, bananas, pineapples.

PRACTICAL RECIPES.

PUREE OF BRUSSELS SPROUTS.—Pick over carefully two quarts of sprouts, wash them thoroughly, and plunge them into a liberal quantity of boiling water slightly salted; boil twenty minutes, drain, and force them through a colander; then rub them through a sieve; return to the range and add two quarts of soup stock. Wet half a teaspoonful of flour in a little cold milk and whisk it into the soup; add two saltspoonfuls of salt gradually, and taste the soup while adding it. A dash of cayenne is preferable to other peppers. Scald a pint of rich cream, and whisk it into the soup; taste for seasoning, and serve with snippets of bread.

ALMOND CAKE.—Beat until light one cupful of butter and two and one-quarter cupfuls of sugar, add two and one quarter cupfuls of milk, then four and one-half cupfuls of lightly sifted flour; add the well beaten yolks of four eggs and another half cupful of flour in which four teaspoonfuls of baking powder have been mixed. Flavor with bitter almond and beat the whites of the four eggs in the last thing.

SPINACH GREEN FOR COLORING.—Wash a peck of spinach in several waters, drain it quite dry and chop it fine, then pound it in a mortar until reduced to pulp, put this in the centre of a strong sheer towel, and with an assistant twist the ends of the towel in opposite directions. Allow the juice to drip into a porcelain lined dish. To each pint of juice add a tablespoonful of fine sugar. Set the dish in a pan of hot water to evaporate one-third and set aside to cool, then bottle and seal.

BAKED CRABS.—Put one teacupful of vinegar in a quart of water and bring it to the boil, then put in the crabs and steam them for half an hour. Let them get cold, pick out the meat, carefully rejecting the entrails. Butter a baking dish and put a layer of the meat in it; over this sprinkle a layer of bread crumbs and some bits of butter and pepper and salt, then some more crab meat and so on until the dish is full. Sprinkle on top some crumbs, pour over all a cupful of rich cream, add a final sprinkling of crumbs, a few bits of butter, and bake a delicate brown. Serve very hot. Canned crab meat may be used when fresh crabs cannot be had.

VANILLA CUSTARD ICE CREAM.—Put one quart of sweet milk, two vanilla beans and one-half pound of powdered sugar in a bright saucepan. Place on the fire and bring it the boiling point, then pour it upon the yolks of twelve eggs, slightly beaten; stir well together, replace it on the fire and keep stirring until the custard begins to thicken. A large spoonful of pure vanilla extract may be used instead of the beans. When the custard mixture is finished and cold, add to it half a pint of double cream and a glass of brandy. Mix, freeze and mould.

APPLE SAGO PUDDING.—Soak a cupful of sago in enough water to cover it, over night. In the morning put the sago into a saucepan, set it in a pan of water, pour a pint of hot water over it and let it cook very slowly until the sago is clear; do not stir. If all the water soaks up add a little more to cook it properly. Pare and core six fine apples, put them into a pan with a tablespoonful of sugar to each apple and a cupful of water. Cook slowly, and when done pour the sago over them when they are very cold. Serve with sugar and cream.

BREAD CHEMISTRY.

EXPLANATION OF THE PHENOMENA OF FERMENTATION.

The art of bread making is one which is subject to this peculiarity, that the conditions of its manufacture are never stationary, but vary every day in the year, and every hour in the day. Notwithstanding this, the laws which govern its processes never vary; they are as unchangeable as the propositions of geometry, as the multiplication table. The phenomena of nature do not move at random. There is no such thing as chance. If our bread be faulty, if we are puzzled, it only shows that some law has come into play which we have failed to recognize, so if we desire to escape failure we must study the laws. And this brings us face to face with chemistry. But a wide experience compels me to own that practical men do not always take kindly to it. And no wonder; for it is only within a few years past that chemistry has had anything to say for itself. Till lately it was as much in the dark as we were ourselves. The common feeling concerning chemistry is that for us it is impracticable. Its language is abstruse, its symbols appaling. We cannot spare the time for such mysteries, even if we had the brains. But, do our needs require this great expenditure of time and exercise of brain power? All we need lies within so easy reach that a man who could neither read nor write may grasp it. Chemistry is a wide subject, but we are not obliged to wade through the whole curriculum. There is the chemistry of medicine, of agriculture, of photography, of the gasworks, the dyeworks, and a hundred others—each dealing with a hundred different substances, while our chemistry, with scarcely more than two, is simplicity itself. We have wheaten flour to convert into bread, and we use yeast to act on it. Salt and water and the process of baking are but minor details, entailing no anxiety. The whole trouble lies in a nutshell, and centres in the due decomposition of the flour previous to baking: Even this, when the yeast is suitable, gives no anxiety. But what a depth of meaning lies in the words, "When the yeast is suitable?" We can all judge a sample of flour with sufficient closeness. We can all mix a sponge, make a dough, heat and temper an oven, and bake a batch of bread; but it is not enough now to know how. The old easy-going days of bread making are past, and if we do not also know why, we shall soon get left behind by those who do. To know this we must have a clear conception of the phenomena of fermentation. How simple the theory of these phenomena is I now propose to explain. Let us assume first that our flour is of suitable quality. We want to produce in it a certain degree of decomposition. We all know that yeast effects this, but yeast, being a plant, is bound to share the vicissitudes of plant life. It may or may not be healthy; it may or may not be of the right species; and, above all, it may or may not be free from admixture with plants different from itself. When we mix yeast with flour we are sowing a crop, and should act accordingly. If we were about to sow a crop of wheat, we should not think of sowing a mixture of red and white wheats, or of wheat mixed with oats or hemp seed. How often do we do this with yeast? I can give you an idea. Every time we have sour bread, every time we have ropy bread, every time we have a flinty crust, almost every time our yeast is faulty. In order to explain this subject more fully, allow me to take an illustration from the growth of common plants around us. Let us take a grain of wheat, a grain of oats, a grain of barley, a pea, a turnip seed, a seed of hemlock, and so on, till we have nineteen varieties of seeds suitable for our purpose. Now let us have a quantity of clay sifted and turned over, so as to be perfectly homogeneous and filled up into twenty flower-pots. The contents of these pots we now assume to be identical throughout. Now let us sow our nineteen seeds in nineteen pots, leaving one pot untouched, and what will be the result? Supposing all to grow and mature, we shall have nineteen crops, all different in analysis. We may set these crops aside now, having no further use for them, and turn our attention to the pots of clay. The question then is, are the contents of these pots identical as at the beginning? No; each crop has taken its own peculiar nourishment from the clay, so that we have nineteen varieties of clay along with the original one. Further, supposing we could eat clay, we should find twenty different foods, twenty different flavors, twenty different degrees of nutritious value. And so it is with the ferments—as they vary, so will the bread vary; whether it be sweet or sour, pink, ropy, or flinty, the ferments are at the bottom of it all. Yeast also differs in itself; that is, there are different species of it as there are different kinds of grapes or of roses; it is subject to ailments, old age, etc., but it

never will nor can produce sour bread; that is the function of other organisms. Electrical disturbances, such as thunder storms, are held responsible for injuries, and the great electrical earth currents, which are continually passing under our feet, are among the possibilities. But these considerations form no part of my idea of practical chemistry; what we want is to know a little about the functions of yeast and its enemies, and to judge and distinguish them. Even at the risk of over-repetition I cannot avoid adding that bread cannot in itself turn sour. When sourness shows we see the work of acid producing germs, originally present in the dough, and so tenacious of life as to survive the process of baking. For this purpose the microscope is our sheet anchor; but to buy one is like buying a piano, a bicycle or a pair of skates—its use can neither be learned nor continued without some expenditure of time.—*Irish Provision Merchant.*

VEGETARIANISM.

THE PRINCIPLE FALLACIOUS, AND CONTRARY TO REASON.

The London *Popular Medical Monthly* for July says, on the above subject: "We do not go so far as to call vegetarians 'barbarians,' but we think vegetarianism, as a system, is a fallacy. Something can be said for every *ism;* but when the position taken up by the opponents of vegetarianism is not a purely animal as against a purely vegetable diet—beef *versus* beans (taking those two articles of diet as good representatives of each system)—but a mixed diet, or beef *plus* beans *versus* beans and other vegetables, we, from a medical point of view, fail to see the good of their society. It may be argued that many people eat too much animal food. That may be so, but when that is admitted it scarcely justifies, in matters of diet, the total abolition of that article. We would here point out that the tendency of medical science is rather to extend the use of an animal diet than to curtail it. To the question, Can health be sustained indefinitely upon a diet of lean meat and water without *any* farinaceous food at all? experience says yes, even if physiology should say no. A diet of lean meat is now being advocated for several purposes in practical medicine, as in obesity, dyspepsia, consumption, and in the absorption of new growths—tumors. In another page we give several examples of people who live almost entirely on animal food, and their experience is not to be overlooked. It may be remembered that, some years ago, at the Aquarium, were exhibited a family of savages who lived all their lives exclusively on lean meat, fish and water; they were cannibals from Terra del Fuego, belonging to the tribe of Onas, and consisted of five adults and two children. The man, aged thirty, took little exercise, and ate every twenty-four hours five pounds eight ounces of lean, cold, boiled horseflesh, two pounds raw fish, and one or two eggs and about four pints of water. In spite of this extraordinary diet there was nothing unusual about the man, regarding him from a medical point of view. Physiology has yet to explain cases like these. Another point not to be lost sight of in connection with this family: where they lived there is nearly always snow on the ground, and yet they reject fat from their diet and take no starchy food at all; they take little exercise, and spend a great portion of their time in sleep. We are not advocating a purely animal diet, only pointing out the fact that it is possible to live on such a diet, and to live in health. It does not go for much, on one side or on the other, that people can live on a purely vegetable or on a purely animal diet. The question rather is, What is the most conducive diet for health and for work—not for savages, but for us who live in England? Anatomy and physiology point to a mixed diet. This vegetarians deny. They say, for example, that the canine teeth in man are not long and projecting, as in the lion and and the dog. To this the obvious answer is: Men do not require to tear with their teeth the flesh from the bones, hence they are not developed for that purpose. As to the anatomy of the stomach, one cannot imagine anything more suited for the digestion of a mixed diet, as it neither resembles the carnivorous nor the herbivorous stomach, and, if it has any resemblance at all, it is a compound of the two classes of animals. A vegetable diet being more complicated and difficult to digest than a flesh diet, we find the digestive apparatus more developed in herbivorous than in carnivorous animals. The length of the intestinal canal is very marked in the former, and a portion of the large bowel attains great dimensions in order the better to assist in the extra digestive requirements. But what we deem more important than anatomy and physiology are the results of experience and daily observation. That a purely vegetable diet suits some people better than a mixed is nothing to the point; would it suit the masses of people better? Speaking for dwellers and workers in large towns, we say no. We are well acquainted with the results in Scotland of what vegetarians call a vegetable diet—oatmeal and milk. The Scotch ploughman develops a fine physique, and gets through his mechanical work on these. This he is enabled to do in consequence of the large amount of fresh air and out-door exercise he gets. Let the average Londoner try it, and in three months he would break down. Let the brain-worker try it, and he, too, would collapse. The diet, besides being chemically sufficient, must be palatable, in order to promote the flow of gastric juice, or to enable one to take enough for the requirements of the body, and it must be capable of being digested and assimilated by ordinary stomachs. For instance, to quote Prof. M. Foster's standard work on 'Physiology:' 'A chunk of cheese stands very high on, generally at the top of, a table of the nutritious value of articles of food drawn up on exclusively chemical principles, according to the units of energy present in a unit of the material; but it is very low down in a corresponding physiological table.

Buffalo Lithia Water, Spring No. 2, in Bright's Disease, Gout, Stone in the Bladder, and Diseases Generally of Uric Acid Diathesis, Etc., Etc.

DR. WM. A. HAMMOND, of Washington, D. C., Surgeon General U. S. Army (retired), Professor of Diseases of the Mind and Nervous System in the University of New York, etc.

"I have for some time made use of the BUFFALO LITHIA WATER in cases of AFFECTIONS of the NERVOUS SYSTEM, complicated with BRIGHT'S DISEASE OF THE KIDNEYS or with a GOUTY DIATHESIS. *The results have been eminently satisfactory.* Lithia has for many years *been a favorite with me in like cases, but the* BUFFALO WATER CERTAINLY ACTS BETTER THAN ANY EXTEMPORANEOUS SOLUTION of THE LITHIA SALTS, and is, moreover, better borne by the stomach. I also often prescribe it in those cases of CEREBRAL HYPERÆMIA resulting from OVER MENTAL WORK—in which the condition called NERVOUS DYSPEPSIA exists—*and generally with* MARKED BENEFIT."

DR. WM. B. TOWLES, Professor of Anatomy and Materia Medica, in the Medical Department of the University of Virginia.

"BUFFALO LITHIA SPRINGS, No. 2, belongs to the ALKALINE or, *perhaps, to the* ALKALINE SALINE Class, *for it has proved far more efficacious in many diseased conditions than any of the simple* ALKALINE waters.

"*I feel no hesitancy whatever in saying that in* GOUT, RHEUMATIC GOUT, RHEUMATISM, STONE *in the* BLADDER, and in all diseases of URIC ACID DIATHESIS, *I know of no remedy at all comparable to it.*

"*Its effects are marked in causing a disappearance of* ALBUMEN *from the urine. In a* single case of BRIGHT'S DISEASE *of the* KIDNEYS, I witnessed *decided beneficial results from its use, and from its action in this case I should have great confidence in it as a remedy in certain stages of this disease.* In DYSPEPSIA, especially that form of it in which there *is an excessive production of* ACID *during the process of nutrition*, in some of the PECULIAR AFFECTIONS *of* WOMEN, notably in SUPPRESSION of the MENSES, and in CHRONIC MALARIAL POISONING, etc., I have found it highly efficacious."

DR. G. HALSTEAD BOYLAND, late Professor of Surgery, Baltimore Medical College, late Surgeon French Army (Decorated), Member Baltimore Academy of Medicine, Member of American Medical Association.

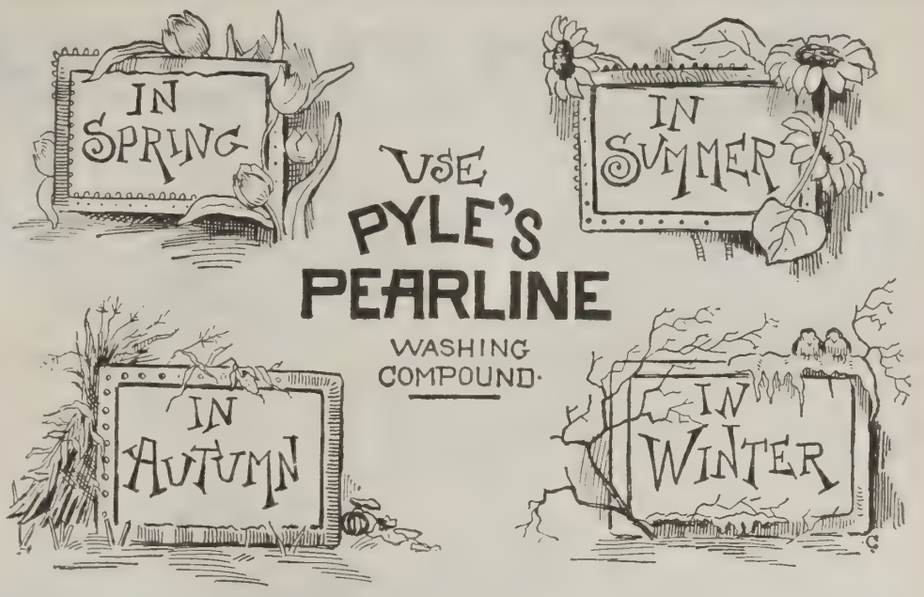
"In BRIGHT'S DISEASE of the KIDNEYS, ACUTE or CHRONIC, BUFFALO LITHIA WATER, Spring No. 2, is, in my experience, *without a rival*, whether in the PARENCHYMATOUS form or INTERSTITIAL NEPHRITIS. In cases in which the ALBUMEN in the URINE reached as high as 50 per cent., I have known it under a course of this water gradually diminish and finally disappear, at the same time other alarming symptoms were relieved and the sufferers restored to health.

"In STONE in the BLADDER of the RED LITHIC ACID and the WHITE PHOSPHATIC DEPOSIT, the SOLVENT power of this water is *unmistakable.*"

Water in cases of one dozen half gallon bottles, $5.00 f. o. b. here.

THOS. F. COODE, Proprietor, BUFFALO LITHIA SPRINGS, VA.

And, similarly, a dish of old peas has a very different physiological function from a plate of fresh meat, even when both contain the same amount of nitrogen.' Beasts of burden live on a purely vegetable diet and possess great strength; but man's highest end is not mechanical work. The races which are vegetarian in diet do not stand high in brain-power, nor are they noted for their strength or endurance. A vegetarian diet wants the *stimulus* and the sustaining power of an animal diet. Dr. Dundas Thompson tells of the effects of meat on some Indians, who were in the habit of having a vegetable diet only, feeling intoxicated after a good meal of flesh, showing it to be a true stimulant; even pigs become pugnacious when fed on meat. Who ever heard of such effects from a vegetable feast? Vegetarianism tends to produce fat; even dogs and cats get fatter on a vegetarian than on an animal diet. On the other hand, a flesh diet forms muscle, and not fat; hence, Banting and others forbid farinaceous food in obesity and in training. The experiments of Pettenkofer and Voit showed that an animal diet increased the absorption of oxygen by the lungs; this undoubtedly favors the disappearance of fat. An animal diet stimulates all the processes of the body; it is more satisfying and has greater staying power. An evidence of the low vital power induced by living on a vegetable diet is to be found in ulceration of the cornea, so common among Hindoos and others. A great deal of nonsense is talked and circulated in the leaflets issued by the Vegetarian Society. A much better case might be made out for vegetarianism than is to be found in any of the pamphlets the society circulates. Vegetarianism has some advantages in selected cases, and suits a few people as well, if not better, than a mixed diet. It has the advantage of cheapness. Here is a dinner we quote from one of their pamphlets: 'Dinner—total cost, 1s. 5d for six persons—Pea soup, potato pie, brown pudding.' The first two courses speak for themselves; the third course is composed of bread, apples, raisins, sugar and nutmeg. The weak part of this course lies in the centre dish. We admire the appetite of the man or woman who can devour a pie made of potatoes and onions! It must be an appetite begotten of semi-starvation."



Beware Peddlers and some unscrupulous grocers will tell you, "this is as good as" or "the same as Pearline." IT'S FALSE—Pearline is never peddled, and if your grocer sends you something in place of Pearline, do the honest thing—*send it back.* 241 JAMES PYLE, New York.

Make two cakes, one with Cleveland's baking powder; the second with any other.

Note the difference.

The Cleveland cake is fine grained, keeps its natural flavor and moisture; "the other" is coarse grained, as if the sugar was too coarse, soon dries out and becomes husky.

Cleveland's leavens best because its strength is produced by cream of tartar and soda only, not by ammonia or alum.

Fine Table Wines

From our Celebrated Orleans Vineyard.

Arpad Haraszthy & Co.

Producers of the

ECLIPSE

CHAMPAGNE,

530 Washington St.

SAN FRANCISCO.

CENERAL AGENCIES:

NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOSEPH R. PEBBLES' SONS CO., 73 West Fourth Street.
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.

A CHURCH TONTINE.—A novel plan for extinguishing a church debt has been hit upon in Melbourne. The church committee—or vestry, as the case may be—divide the total debt among themselves and each man insures his life for the amount that falls to his share. The policies are transferred to the church, and the annual payments on them are made out of the collections. Then, of course, as the members of commit- "drop off," the sums insured on their lives drop in, and later, when the last committeeman is dead, the last instalment of the church debt will be paid. The plan has the merit—if merit it be—of throwing the whole responsibility for the continuance of the indebtedness upon Providence.

A SPIDER'S PERFIDY.—Some men who were trying to keep cool in a stable at Yorkville yesterday afternoon had an opportunity to witness the fidelity of a little spider and the rascally perfidy of a big one. Incidentally, also, they saw the death of a large horse-fly. The fly had entangled himself in the big spider's web, and his struggles threatened to tear the structure to pieces. The builder of the trap saw the danger, but he dared not attack his powerful captive alone. Swiftly he ran down the wall, and in a few moments returned, followed by a small spider, whose unpretentious web was near the ground. Then the big spider seized the fly from above, and the little one attacked from below. Simultaneously they injected venom into him, and soon there was a dead fly to divide between them. The small spider, who had fought and worked valiantly, came up to claim his share, and his treacherous coadjutor seized him by the back of the neck and pitched him out of the web—which shows that alliances between the weak and the strong are as unsatisfactory to day as they were in Æsop's time.

ONE TO NINE.—The longest monosyllabic words in the English language are the following nine-letter words: Scratched, stretched, scrunched, scranched, screeched, squelched, staunched, schreight, splotched.

ANCIENT BAKERY.—The oldest bakery now in existence is that belonging to Master-baker Dietrich, in Frankfurt-on-Main, it being mentioned as early as the year 1421. It was, however, first used as a bakery in 1467. A room dating from 1603 is still in good preservation, and this, with a beautiful inlaid shrine, dating from 1614, are among the curiosities of the house. The shrine was discovered by the owner during the course of some repairs in 1763, and is a remarkable piece of work, said to have been done by Johann Caspar Arzt.

TEMPERING TOOLS.—The following is said to be the Swiss method of hardening cast steel for cutting tools. Mix in a suitable vessel four parts of pulverized resin and two parts of train oil. Stir well in this one part hot tallow. Into this mixture the article to be hardened is plunged at a low red heat and held there until thoroughly cooled. Without cleaning off, the piece is again put into the fire and suitably tempered in the ordinary way. An examination of steel thus hardened indicates that the hardening is deeper and more uniformly distributed than is commonly the case, and that the steel is less brittle. Articles thus hardened have excellent and durable cutting qualities.—*Stone.*

25 CTS PISO'S CURE FOR 25 CTS
CURES WHERE ALL ELSE FAILS.
Best Cough Syrup. Tastes good. Use in time. Sold by druggists.
CONSUMPTION

Armour's

Extract of BEEF.

The best and most economical "Stock" for Soups, Etc.

One pound equals forty-five pounds of prime lean Beef.

Send to us for our book of receipts, showing use of ARMOUR'S EXTRACT in Soups and Sauces.

ARMOUR & CO., Chicago.

WATCHES.

EVERY one wants a watch, and naturally a good watch that keeps accurate time, presents a handsome appearance, and is inexpensive. If such a watch can be found of American manufacture, it is an additional appeal to our patriotism. Just such a watch as this ideal THE ANALYST PUBLISHING COMPANY is enabled to offer as a Premium to its readers. Having some large advertising contracts we have been enabled to procure the movements of the manufacture of the best known American watch factories, namely, the Waltham, Elgin, Hampden and Illinois Watch Companies. These movements are adapted for both ladies' and gentlemen's watches, and are warranted by the makers. These movements have seven jewels, patent lever movement, chronometer balance, patent safety pinion, sunk hard-enameled dial, straight line visible palette, stem winders, hand set; in fact, contain all the latest improvements and can be readily cleaned or repaired by any ordinary good watchmaker. They can be regulated to run as close as any movement.



It is needless to say that to case these movements in solid gold cases would make them too expensive, yet they are cased in what are known as gold filled or stiffened "Ladd" cases, and are warranted to be 14 karat gold, made from two sheets of 14 karat gold overlaying fine composition metal, with regular jointed caps, covers and bezels, and to wear at least five years. They are not plated, nor rolled gold, but actual 14 karat gold cases, thin of course, but stiffened and strengthened by being filled with this fine composition metal. They are finished in the same manner, engine turned and engraved as solid gold watches, and wear and look just the same. No one but an expert can tell them from a solid gold watch. These watches are made both open face and hunting case style, in gentlemen's or ladies' sizes. For gentlemen we recommend plain engine-turned cases; for ladies, a handsomely engraved case.

How to Obtain One of these Watches.

These watches are not to be purchased from us at any price. Send us a club of 25 subscribers to the AMERICAN ANALYST, and $25, the regular subscription price, and one of these watches (your choice of style and size) will be immediately forwarded, post-paid and registered, to your address. You need not wait until you have your 25 subscribers all together, but forward them as you get them and they will be credited to you, and when the number is complete the watch will be sent. A subscription for two or three years will be counted as two or three subscribers.

As these watches are retailed by jewelers at not less than $25, it will be seen that we are offering a real premium with the sole object of increasing our circulation, and that by taking advantage of our offer any one can obtain a good, reliable and handsome watch without cost. As the number of these watches at this price is limited, it is advisable to take steps at once to procure a bargain.

THE ANALYST PUBLISHING CO., 19 PARK PLACE, NEW YORK.

BICYCLES

GIVEN AWAY TO BOYS AND GIRLS!

AN OPPORTUNITY OPEN TO ALL.

The Analyst Publishing Company being desirous of largely increasing their subscription list, will furnish every one with a beautiful Safety Bicycle, ABSOLUTELY FREE, in return for a few hours' canvassing.

To every boy and girl who secures 75 subscribers for the American Analyst at $75, we will give a splendid

$40.00

NONPAREIL

SAFETY BICYCLE.



These bicycles are adapted in size to boys, but are strong enough to carry a man. A boy's bicycle should be a strong one. They are manufactured by the OVERMAN WHEEL CO., the makers of the celebrated VICTOR Bicycle, and have the full guarantee of the makers.

The following is a brief description of the NONPAREIL SAFETY; 26-inch wheels; ball bearing all around, including pedals; solid crescent rims; double tangent spokes; three-fourths inch tires; cranks, three throw, $4\frac{1}{4}$ to $5\frac{3}{4}$ inches; guards to both wheels; tool-bag, oiler and wrench. Finished in bright enamel, all exposed metal heavy nickel-plate on copper.

In selecting these machines as a premium, we have disregarded cheapness and selected a Bicycle which is serviceable, and the makers of which have an established reputation for building the best Bicycle that money, machinery and brains can produce. We are actually furnishing the Bicycles and Papers at less than cost, but hope by stimulating active and successful canvassing, and thus enlarging our subscription lists, to make an eventual profit. We positively guarantee these bicycles to be just as here represented. They will be shipped by express f. o. b. in New York.

Subscription orders must be made out plainly and legibly, and sent as fast as secured, addressed to

THE ANALYST PUBLISHING CO., 19 Park Place, New York.

TEAS

REVOLUTION IN PRICES.

Direct from TEA GROWERS to TEA POT.

Finest Teas Imported.

Send in your orders at once. On $20 00 Tea and Baking Powder orders, we will allow you a **Complimentary,** in any kind of Tea you may select, equal to 25 per cent. and **Pay all Express Charges.** This is an unprecedented offer. Remember we are the **"Old Reliable,"** THE GREAT AMERICAN TEA COMPANY Established 1861. No discounts, No Premiums, No Panels.

PRICES OF TEAS & BAKING POWDER.

OOLONG,	30, 35, 40, 50, 60, best 65 cts. per lb.
MIXED,	30, 35, 40, 50, 60, best 65 " "
JAPAN,	35, 40, 50, 60, 70, 80, best 90 " "
ENGLISH BREAKFAST,	35, 40, 50, 60, 70, 80, best 90 " "
YOUNG HYSON,	35, 40, 50, 60, 70, 80, best 90 " "
IMPERIAL,	35, 40, 50, 60, 70, 80, best 90 " "
GUNPOWDER,	50, 60, 70, 80, 90, best 1.00 "
BASKET FIRED JAPAN,	50, 60, 70, 80, best 90 " "
CONGOU ENGLISH BREAKFAST,	50, 70, best 90 " "
SOUCHONG "	" 50, 70, best 90 " "
FORMOSA OOLONG,	50, best 65 " "
ORANGE PEKOE,	50, best 70 " "
ASSAM,	50, best 70 " "
BAKING POWDER, in One Pound Tin Cans,	45 cts. per can.
BAKING POWDER, in Half-pound Tin Cans,	25 " "

All goods warranted to give perfect satisfaction, or they can be returned and exchanged or money refunded, and all expenses paid by us.

THE GREAT AMERICAN TEA COMPANY,

— IMPORTERS, —

31 & 33 Vesey St., P. O. Box 289. New York.

N. B.—Only inducements are *Best Goods* at *Lowest Prices.*



DETECTIVE! WE WANT A MAN IN every **locality** to act as **Private Detective** under our instructions. Send stamp for particulars.

WASHINGTON DETECTIVE AGENCY,
Box 787. Washington, Iowa.



We Can Save You——— Fifty Dollars When You Build. ✳

If you are thinking of building a home, here is an opportunity to secure one or several designs of houses which will aid you in deciding just what you want.

PLANS READY TO BUILD FROM

ONLY 25 CTS. EACH

Or Five Sets for One Dollar.

The designs given below to select from are practical and are drawn to a large scale by Geo. O. Garnsey, architect for THE NATIONAL BUILDER. Each one consists of a large, beautifully colored picture of a front elevation, including the floor plans, the details, the specifications, and carefully prepared estimates of cost, and all ready to build from. By a special premium arrangement we are enabled to sell these plans at the above extremely low price. **Specify number of Design.** Send all orders to

THE ANALYST PUBLISHING CO.,

No. 19 PARK PLACE, NEW YORK CITY.

No. 2. **Clover Cottage.** Neat, cosy and modern. Cost, $1,960.
No. 3. **6-Room Elegant Brick Residence.** Suitable for city or country; Handsome Front, Good Basement, etc. Cost, $3,500.
No. 4. **6-Room Modern Residence.** Handsome Front, with broad circular Veranda. Cost, $3,000.
No. 5. **Cheap 5-Room Genteel Cottage:** With Reception Hall, 9x12, and good Basement. Cost, $2,000.
No. 6. **8-Room Residence.** Handsome Front, neat Porch, etc. One of a series of residences much in demand. Cost, $3,000.
No. 10. **Bank and Store Fronts.** Showing different styles of Show Windows, and highly Ornamented Fronts. Two designs. Cost, $1,613 and $1,325.
No. 17. **Double City Flat Building.** Six rooms in each flat; building adapted to narrow lot. Ornamental, Romanesque Front. Cost, $10,000.
No. 19. **Queen Anne Cottage, Eight Rooms.** Good light; exhibiting good effect. Cost, $4,000.
No. 21. **Maplewood Cottage, Three Rooms.** Abundance of piazza. Very neat and convenient. Cost, $1,000.
No. 22. **Hyacinthe Cottage, Three Rooms.** Very odd and pleasing. Cost, $750.
No. 23. **Clovernook Cottage.** New in style. Cost, $750.
No. 25. **Eastlake Cottage, 8 Rooms.** Neat 2-story Frame. Cost, $1,875.
No. 26. **Granite Stone Cottage, Six Rooms.** This design is handsome. Cost, $2,575.
No. 38. **Cheap City House, Eight Rooms.** Suited for inside lot; nicely laid out. Cost, $2,600.
No. 40. **Charming Suburban Cottage of Five Rooms.** Very roomy and convenient. Cost, $2,500.
No. 42. **Beautiful 6-Room Cottage.** Handsomely designed; all modern improvements. Cost, $3,100.
No. 49. **Neat Village Church.** Seating capacity about 600. Cost, $7,500.
No. 50. **Store and Office Building.** Brick; 2 stores and 8 offices, very handsome. Cost, $7,000.
No. 51. **Modern Suburban Residence of Nine Rooms.** Beautiful design. Cost, $2,100.
No. 57. **Rosedale Cottage, 3 Rooms.** With Bay Window, Frame. Cost, $1,000.

TABASCO PEPPER SAUCE,

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced by connoisseurs to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY'S SON,

NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

THE

New Model "HALL"



A Perfect Typewriter. Best Manifolder. Terms to Agents Liberal. Portable. Inexpensive. Writes All Languages. *Read Mr. Howell's Opinion.*

"I wish to express my very great satisfaction with the Hall typewriter. Impressions and alignment are both more perfect than any typewriter that I know, and it is simply a pleasure to use it. It is delightfully simple and manageable."

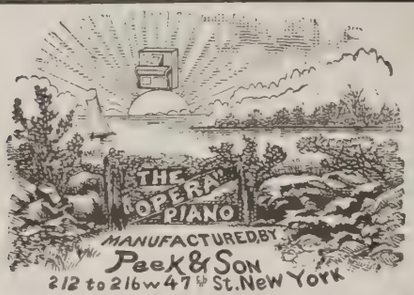
(Signed) W. D. HOWELLS.

Send for Catalogue and Specimens of work.

Address N. TYPEWRITER CO., 10 Temple Pl., BOSTON.

HARTSHORN'S SELF-ACTING SHADE ROLLERS

NOTICE SCRIPT NAME OF Stewart Hartshorn ON LABEL, AND GET THE GENUINE HARTSHORN



A HIGH-GRADE PIANO

AT A VERY MODERATE PRICE.

NEW DESIGNS. FANCY WOODS.

Terms Easy. + Monthly Instalments.

TWO, THREE AND FOUR PEDALS.

Catalogues, Prices, Terms, Etc., sent to any address.

EVERY PIANO WARRANTED 5 YEARS.

(Mention this Paper.)

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,

HOWARD STREET, BOSTON, MASS.

GOLD MEDAL, PARIS, 1878.



W. BAKER & Co.'s Breakfast Cocoa

from which the excess of oil has been removed,

Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

"BILLET"

are

Carefully Selected French Sardines,

Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS.

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.

MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.

STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

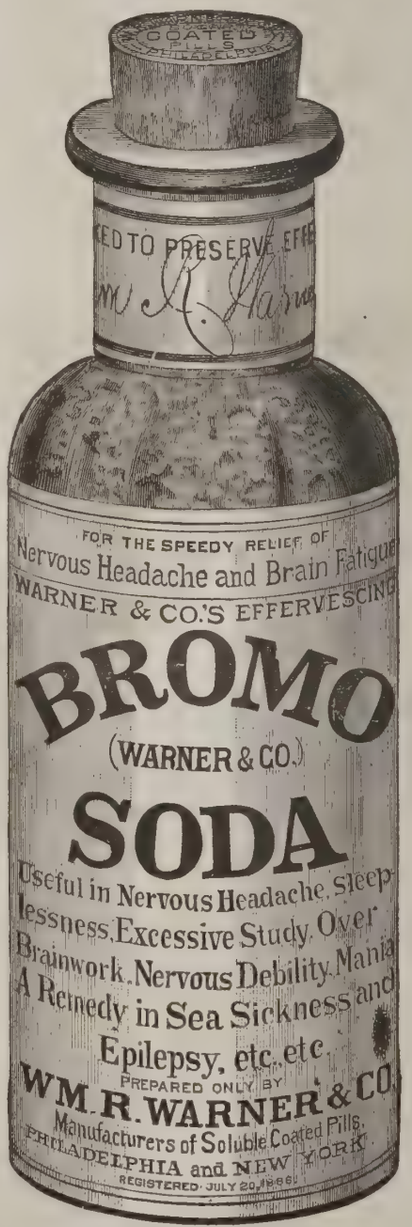
FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

BROMO SODA.

Useful in Nervous Headache, Sleeplessness, Excessive Study, Over Brainwork, Nervous Debility, Mania, Etc.

DOSE—A heaping teaspoonful in half a glass of water, to be repeated once after an interval of thirty minutes, if necessary. Each teaspoonful contains 30 grs. BROMIDE SODIUM and 1 gr. CAFFEIN.



SUPPLIED BY ALL DRUGGISTS

Ask for (Bromo-Soda, Warner & Co.) and take no other "Bromo."

RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,
184 Greenwich St., N. Y.

HAMMOND'S
CELEBRATED
Calumet Oleomargarine

Strictly pure, cheap and healthful.
Ask your grocer for it.
Put up in packages of all sizes, also prints and rolls.

G. H. HAMMOND CO.,
607 to 615 THE ROOKERY,
CHICAGO.

Also offices at Boston, South Omaha, Neb., and Hammond, Ind.

BLAIR'S PILLS.



Great English Remedy for GOUT, RHEUMATISM and KIDNEY COMPLAINTS.
SURE, PROMPT and EFFECTIVE.
Large Box, 34; Small, 14 Pills.
At all Druggists, and
224 WILLIAM STREET, NEW YORK.

Pure LAGER BEER,
"IMPERIAL" and "CULMBACHER"
Brewed & Bottled
SPECIALLY FOR
HOTELS, CLUBS
AND
PRIVATE FAMILIES
BY
Beadleston & Woerz
291 W. 10th St. New York.
Orders by Postal Card promptly attended to.

SWIFT'S
CHOICE
Chicago Dressed Beef
AND
MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,
UNION STOCK YARDS,
CHICAGO, ILLS.

PUBLICATIONS OF THE
ANALYST PUBLISHING CO.

THE AMERICAN ANALYST.
Weekly. Every Thursday. $1 per year.

THE ROOFER, TINNER AND SHEET-IRON WORKER.
Monthly. 15 h each month, $1 per year.

THE LEATHER MANUFACTURER.
Monthly. 1st each month. $3 per year.

Reliable agents and representatives wanted everywhere on liberal terms. Address
ANALYST PUBLISHING CO.
19 PARK PLACE, NEW YORK.



We can save you Fifty Dollars when you Build. See



A complete set of Plans to build from, simply state about price of dwelling desired. 25 cts. in stamps. Our book "Beautiful Homes." 25 cts. Our monthly book "The National Builder," 25 cts. Address
The National Builder, Adams Exp. Bldg., Chicago, Ill.

Subscriptions $1 per year. Now is the time to subscribe.

THE LABORATORY.

To Inventors, Manufacturers and Applicants for Patents

The AMERICAN ANALYST may be consulted upon all matters involving theoretical or applied chemistry. Advice and opinions given. Analyses and assays made. Patents perfected and secured. Terms reasonable.
Address, AMERICAN ANALYST,
19 Park Place, N. Y.

THE ORIGINAL AND GENUINE
(WORCESTERSHIRE SAUCE).
LEA & PERRINS' SAUCE



In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—
Lea & Perrins
Beware of Imitations; see that you get Lea & Perrins'
For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.
JOHN DUNCAN'S SONS. NEW YORK.

INSTRUCTIONS TO SUBSCRIBERS.

The **Names of all Subscribers** are registered as soon as received, and paper is always promptly forwarded.

Postage.—The postage to all parts of the United States and Canada is paid by the publisher.

Remittances of small sums may be made with comparative safety in ordinary letters. Sums of one dollar or more must be sent by registered letter or P. O. money order, otherwise we cannot be responsible for same. Silver must not be sent in a letter.

Postage Stamps will be received for the fractional part of a dollar, and in any amount when it is impossible for patrons to procure bills, but you must send one or two-cent stamps only.

SUBSCRIPTIONS.—The AMERICAN ANALYST will be sent one year to any subscriber for ONE DOLLAR. New subscriptions can begin at any time.

We Stop the Paper at the expiration of the time paid for unless a renewal of subscription is received. Those whose subscriptions have expired must not expect to continue to receive the paper unless they send the money to pay for it.

Change of Address.—Subscribers wishing their addresses changed must invariably give their former as well as new address.

Missing Numbers.—It occasionally happens that numbers of our paper sent to subscribers are lost or stolen in the mails. In case you do not receive any number when due, write us a postal card and we will cheerfully forward a duplicate of the missing number.

Most Important of All.—In every letter that you write us, never fail to give your full address, plainly written—name, post-office, County and State.

Address all letters to

THE ANALYST PUBLISHING CO.,
19 Park Place, New York.

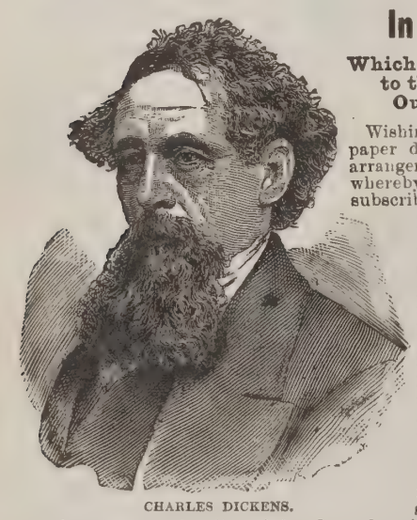
GRAND PREMIUM OFFER!

A SET OF THE

WORKS OF CHARLES DICKENS,

In Twelve Large Volumes,

Which we Offer with a Year's Subscription to this Paper for a Trifle More than Our Regular Subscription Price.



CHARLES DICKENS.

Wishing to largely increase the circulation of this paper during the next six months, we have made arrangements with a New York publishing house whereby we are enabled to offer as a premium to our subscribers a **Set of the Works of Charles Dickens**, in **Twelve Large and Handsome Volumes**, with a year's subscription to this paper, for a trifle more than our regular subscription price. Our great offer to subscribers eclipses any ever heretofore made. Charles Dickens was the greatest novelist who ever lived. No author before or since his time has won the fame that he achieved, and his works are even more popular to-day than during his lifetime. They abound in wit, humor, pathos, masterly delineation of character, vivid descriptions of places and incidents, thrilling and skillfully wrought plots. Each book is intensely interesting. No home should be without a set of these great and remarkable works. Not to have read them is to be far behind the age in which we live. The set of Dickens' works which we offer as a premium to our subscribers is handsomely printed from entirely new plates, with new type. The twelve volumes contain the following world-famous works, each one of which is published *complete, unchanged, and absolutely unabridged:*

DAVID COPPERFIELD,
MARTIN CHUZZLEWIT,
NICHOLAS NICKELBY,
DOMBEY AND SON,
BLEAK HOUSE,
LITTLE DORRIT,
OUR MUTUAL FRIEND,
PICKWICK PAPERS,
BARNABY RUDGE AND CHRISTMAS STORIES,
OLIVER TWIST AND GREAT EXPECTATIONS,
THE OLD CURIOSITY SHOP AND THE UNCOMMERCIAL TRAVELER,
A TALE OF TWO CITIES, HARD TIMES AND THE MYSTERY OF EDWIN DROOD.

The above are without question the most famous novels that were ever written. For a quarter of a century they have been celebrated in every nook and corner of the civilized world. Yet there are thousands of homes in America not yet supplied with a set of Dickens, the usual high cost of the books preventing people in moderate circumstances from enjoying this luxury. But now, owing to the use of modern improved printing, folding and stitching machinery, the extremely low price of white paper, and the great competition in the book trade, we are enabled to offer to our subscribers and readers a set of Dickens' works at a price which all can afford to pay. Every home in the land may now be supplied with a set of the great author's works.

GLENN'S SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,

C. N. CRITTENTON,
115 FULTON STREET,
NEW YORK.

Be progressive and keep abreast of the times. Avoid dyspepsia by using **Lard Compound** and **Cottolene,** a substitute for lard.

The highest medical authorities pronounce them healthful; and expert cooks commend them.

Our **Clairette** brand of cotton oil soap is the purest and best laundry soap in the market; as pleasant to the hands as genuine castile.

N. K. FAIRBANK & CO.,
CHICAGO AND ST. LOUIS.

OUR GREAT OFFER

TO SUBSCRIBERS

TO THE

AMERICAN ANALYST.

We will send the **ENTIRE SET OF DICKENS' WORKS,** *in* **TWELVE VOLUMES,** *as here described, all postage prepaid by ourselves, also* **THE AMERICAN ANALYST** *for* **ONE YEAR,** *upon receipt of* **$1.50,** *which is only* **50** *cents more than the regular subscription price of this paper.* Our readers, therefore, practically get a set of Dickens' works in twelve volumes for only **50** cents. This is the grandest premium ever offered. Up to this time a set of Dickens' works has usually been $10.00 or more. Tell all your friends that they can get a set of Dickens' works in twelve volumes, with a year's subscription to **THE AMERICAN ANALYST** for only **$1.50.** Subscribe now and get this great premium. If your subscription has not yet expired, it will make no difference, for it will be extended one year from date of expiration. We will also give a set of Dickens', as above, free and post-paid, to any one sending us a club of three yearly subscribers.

ADDRESS:

THE ANALYST PUBLISHING CO.
No. 19 PARK PLACE,
NEW YORK.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 31. NEW YORK, THURSDAY, JULY 30, 1891. WHOLE No. 231

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - $1 per year.
Single Copies, - - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.
Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.
Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,

H. LASSING, M. D., } Editors.
T. P. McELRATH, }

No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

Antediluvian Monsters 362
Chinese Scholars 365
Communicating with Mars 364
Domestic Dietetics 365
Editorials 361
Subterranean Investigations; A Concession; Poisonous Dyes.
Leucocytes 363
Monkey Talk 364
Thought and Language 365

SUBTERRANEAN INVESTIGATIONS.

This is certainly an age of scientific progress. It would be a superfluous task to enter upon a trite recapitulation of the wonderful discoveries that give this generation its preeminence over all its predecessors, but an interesting enumeration might perhaps be made of the unfinished schemes now in progress or under serious advisement for wresting from nature still more of her hidden mysteries. Thus, while one set of philosophers are experimenting with the surrounding atmosphere, hoping to obtain a mastery over the moisture suspended in the clouds, or to gain control of the electrical currents supposed to be coursing through the ether, others are turning their minds and efforts downward toward the centre of the globe we inhabit. During the last two sessions of Congress there has been serious discussion of a Government appropriation for boring a hole in the earth several miles in depth. It has long been recognized that an inconceivable amount of value in the shape of metals and mineral substances is locked up out of reach beneath the crust of this planet. All the riches dug out of it represent merely the most superficial and ineffective scratching of the surface. Geologists are agreed that the interior of the earth is largely composed of metals. Whereas the surface matter of the planet weighs only about two and one-half times as much as water, it is known as a fact that towards the centre the average weight of things is eleven times that of water. This is due to the circumstance that while this sublunary orb was cooling and condensing the heavier particles sought the middle. Therefore it is probable that the great mass of the sphere is iron. But there are other metals more heavy than iron, and these would naturally form an accumulation immediately about the centre of the globe. So it is not unreasonable that certain members of Congress and other persons of keen judgment should consider the advisability of boring a hole in the earth for the purpose of extracting some of its metallic contents. For scientific purposes a pit has recently been sunk at Speling, in Germany, to the depth of a mile. Unfortunately, water has been struck, and no results which add very materially to human knowledge have thus far been obtained. Another well has been driven at Wheeling, W. Va., as far down as three quarters of a mile. It is dry, and the boring process is proceeding at the rate of about ten feet a day. Estimate is made that at twenty miles from the surface of the earth every known substance—metals, rocks and all—becomes fused and liquid. Once let the point be reached, and naturally whatever is below must spout up of its own accord, without expense of mining. Immediately the price of metals in the market would be reduced to little or nothing, and a new age would dawn upon civilization. It has been suggested that such an artificial conduit would be, to all intents and purposes, a volcano; but any dangers which it would otherwise threaten might be obviated easily by establishing the works on an open prairie.

A CONCESSION.

The AMERICAN ANALYST, replying to our article in which we took it to task for its aspersions upon the grocery trade, speaks of "Pure Food" Exhibitions as humbugs. Let us say to it, here and now, that the Boston grocers never called their Exposition a Pure Food affair, but a Food and Health Exposition. No one can exactly determine what pure food is, but it can determine what wholesome food is. Some of the best preparations are not pure—if pure they would have little or no merit. * * * * * * THE ANALYST, in trying to show that grocers use sophisticated goods, quotes as an editorial utterance of this paper a quotation from the Holyoke and Fall River daily papers, as explicitly stated when we published the same. The very item it publishes from the *Voice* it would denounce as an exaggeration. It knows that a good deal of this adulteration talk is humbug. At the same time it does exist. But we claim the grocer is not the only sinner.

The above is from the *New England Grocer* of recent date. It is gratifying to observe that our highly esteemed contemporary admits that the phrase "Pure Food" could not appropriately be applied to the money-making schemes which are becoming popular under the flimsy pretext of Food and Health Exhibitions. That is the case in Boston and New York alike. It is also gratifying to see our contemporary concede that the grocers sometimes handle sophisticated goods. We should judge, in fact, that the evil referred to prevails in his locality to a larger extent than it does in this metropolis. The Boston *Herald* of July 9 asserts that the Massachusetts State Board of Health, in a list of twenty of the most common articles of food in use in every family, finds that there is 32 per cent. of adulteration. This exhibit would be most alarming if the list included all that was used in the household economy for the supply of the table for adults and children. Fortunately, however, there are certain staple products, such as sugar, flour, and other cereal products, which are rarely adulterated, and therefore need little inspection. The report of the board, which has just been issued, shows an examination of 434 specimens, gathered at random, and subjected to analytical examination. Of these, 295 were found to be of good quality, while 139 were adulterated, varying from the legal standard. The most alarming exhibit reported from the examinations was in the matter of canned goods, where only one-seventh of all the specimens were found to be of such quality as to warrant the seal of approval.

POISONOUS DYES.

Concerning the much discussed question as to how far organic dyestuffs are detrimental to the human system, Dr. Theo. Weil asserts that, except gamboge, which has been declared to be poisonous by an imperial German law governing the subject, and certain berries used for dyeing wine, the natural dyestuffs are entirely innocuous; and, of the artificial organic dyestuffs, the law in question mentions only two as being poisonous, namely, coraline and picric acid. In regard to the general belief that most of the coal-tar colors are poisonous—or, as it is commonly termed, poisoning produced by wearing clothing dyed with aniline—Dr. Weil is of the opinion that most of these cases are based upon exaggerated statements or incorrect observations—because, if the tar colors were really as detrimental as represented, the cases of poisoning, in view of the almost universal employment of those dyes, both for coloring fabrics and food products, would be far greater, and, in especial, the workmen employed in manufacturing them would be subject to constant illness, which does not appear to be their experience.

The amount of so-called scientific information which is sheer nonsense that is being printed nowadays, would be ludicrous if it were not sometimes dangerous. People reading such items as the above coming apparently from good authority are lulled into a sense of false security from which they can be only aroused when they have by bitter experience learned that the information was erroneous. This article contains a great deal of truth, but the danger lies in much truth

that is hidden from the non-professional reader by the bold assertion for instance, that coal-tar colors are non-poisonous. While it is true that the coal-tar colors in themselves may be non-poisonous, yet when they are prepared with arsenic as the oxydizing material they are in the highest degree poisonous. Red, green and yellow coal-tar colors are generally thus made with arsenic and for that reason alone fuchsine, as sold commercially, is well known to be dangerous. Of course, fuchsine is made free from arsenic by repeated washing and recrystallizing, but this makes it too expensive for ordinary use, and consequently nearly all turkey reds so extensively used in carpets, hosiery, wall-paper, and even in coloring ice-cream, confectionery, and wine, has often produced dangerous results. The yellow color produced from coal-tar called naphthaline, made as a nitrous compound has been found equally poisonous. Stockings in the dyeing of which antimonial salts have been used as a mordaunt have caused ugly ulcerations. The argument that if these colors were really dangerous, their extensive use would make them more fatal is fallacious, because in their use great care is taken to employ but a small quantity, and where used in edibles much reliance is placed on the small quantity of the coloring necessary to produce the required color, and therefore the quantity of the poison taken into the stomach at any one time is ordinarily too infinitesimal to cause any direct noticeable effect. Another thing must be borne in mind, that is that while a small quantity of poison may not sensibly injure a strong healthy person, these things are all used for infants and invalids who are much more susceptible. In Massachusetts stringent laws have very properly been enacted to protect the public against these colors and it would be a great step in advance, if other States would follow the example. The AMERICAN ANALYST has from time to time given instances enough of such poisoning to warrant stringent repression.

ANTEDILUVIAN MONSTERS.

A WONDERFUL COLLECTION OF PREHISTORIC BONES.

There will shortly be started for Washington, writes Rene Bache, the most extraordinary procession of animals ever seen on the face of the earth, upon which the ghosts of Barnum and Forepaugh might gaze with as wide-eyed astonishment as ever the spectacle of their own United Shows excited in the innocent minds of rural adolescence. In this wonderful parade will be gigantic reptiles as big as good-sized houses, some of them 100 feet in length, flying dragons with a twenty-five foot spread of wings, huge birds with teeth, mammals two or three times as great in size as elephants, sharks as large as the hugest whales, other fishes clad in mighty plates of armor, and countless specimens more of equal strangeness and enormous dimensions, such as actually inhabited the world before man arrived in it. For nine years past the Government has been digging up and putting together the skeletons of these strange creatures, and now the vast collection, at the present stored in New Haven, Conn., is being got ready for shipment by rail to the National Museum. The whole of it would occupy fully one-half of that institution's building, and so only a portion is to be immediately forwarded, the rest to follow as soon as quarters have been established by Congress for its accommodation. The business of digging for these tremendous fossils is carried on pretty much like any other mining. In various parts of the West there are great deposits of them, into which the scientific enthusiasts eagerly delve for relics of epochs thousands of centuries old. One of their chosen hunting grounds is the region between the Rockies and the Wasatch Mountains. Ages ago the upheaval of these hills by geologic action cut off the portion of what had been sea between these ranges from the ocean, and the water thus shut away formed many big lakes. A typical one of this sort existed in Wyoming, and around it the mighty antediluvian mammals gathered in herds to crop the succulent and luxuriant vegetation of what was then a tropical climate in that region. They died natural deaths or became mired in the mud when they went to drink, and the sediment slowly deposited in the water covered up their bones and preserved them from decay. This sediment reached a mile in thickness, holding between its layers these ancient skeletons, distributed like currants through a cake. At length the water, draining off, left the land dry, and, in the case of the Wyoming lake referred to, subsequent floods washed away much of the sediment previously deposited, leaving what are now called "bad lands"—picturesque with cliffs, peaks, and columns carved out in fantastic shapes and of variegated coloring. Through such a region as this the scientific explorer travels with his eyes as wide open for fossils as the gold hunter keeps his for the shining metal. If from the face of some rocky cliff he chances to see a bone project, exposed by the action of water that has cut away the hillside, he sets a party of men to quarrying with drill, blast, and pickaxe until whatever is there in the way of remains has been taken out. Possibly some great deposit of prehistoric monsters may be struck in this way, in which case the find is kept as secret as possible, being regarded by the discoverer as his private mine. If he gave it away, rival paleontologists would rush to the spot and dig out all the animals for their own study and glory. Prof. O. C. Marsh, who directed the gathering of the Government collection referred to, has such mines of his own all over the West, from which he can draw to order the most astonishing variety of gigantic creatures. Usually these amazing fossils are found embedded in solid rock. After they have been roughly quarried out, the sandstone or other matrix enclosing them is carefully chiselled away from the bones. The latter are given a coat of glue to keep out the decomposing air, and any that are broken or splintered are bound up with twine, after which they are packed for shipment. When one of these beasts of antiquity died, its carcase being covered up with sediment that afterwards became stone, the skeleton was apt to be preserved entire, and with its parts in position, all ready for mounting in a museum. There was a new reptile found in Wyoming the other day, in such a complete state, which has been named the brontosaur. It was 60 feet long, stood 15 feet high when alive, and weighed 20 tons. Cast in the rock from which it was taken was a perfect mould of one of its eyeballs, with which it looked upon the world three millions of years ago. It had a very small head, a long and flexible neck, a short body and a huge tail. In the same neighborhood has also been discovered recently another reptilian monster called the triceratops, which had an enormous bony frill around the back of its neck. This surprising development, measuring six feet across, was intended for the attachment of great muscles that were necessary holding up the huge head. The animal, though tremendously massive, was only thirty feet long; but it was covered with plates of armor and had a sharp and horny beak, not to mention a horn on its nose and another on its forehead, the latter two-and-a-half feet in length. In Colorado have been found great deposits of the bones of the titanosaur, the biggest land animals that ever existed. They grew to be sixty-five feet long, and forty feet high when erect upon their hind legs. Instead of browsing, as did the brontosaur and triceratops, upon the luxuriant aquatic vegetation around the lake borders, they feed upon the foliage of trees on the mountain sides. Likewise did the iguanodon, several times as heavy as an elephant, which had a nipping beak like a turtle's and also walked erect, using its huge tail for a support, and towering to the height of forty or fifty feet. In the Mesozic epoch, or "age of reptiles," when the creatures described lived, these and other similar herbiverous animals were the biggest of the beasts. One of them, the attlantosau, was one hundred feet long, its thigh bones, many of which have been found, measuring eight feet in length and twenty-five inches through. They had various methods of pursuing existence. Some went on all fours, and had backbones that were mere shells filled with warm air from the lungs, which served them as floats while they walked in the sea shallows in water deep enough to cover their backs, extending their long necks to crop the vegetation along shore. Of this sort was the camera-saurus, eighty feet in length. Others had enormously long hind legs, on which they were able to wade out far into the ocean after seaweeds, and were provided with not fewer than two thousand teeth for grinding their food. Such was the mighty kangaroo-like hadrosaurus. Yet other species dwelt on land, like the triceratops, and these were usually provided with armor and horns for defence against their enemies. It would seem as if such monsters as are above described need have feared no living foes, but, in fact, they were common prey to great numbers of carnivorous reptiles, smaller in size but of tremendous activity and fierceness, which fed upon these unwieldly vegetable-eating giants. Most terrific of all, perhaps, was the incredibly ferocious lælaps, which was forty feet long, stood twenty-five feet high on its hind legs, and was built like a kangaroo. It was the most astonishing jumper that ever existed, with teeth for cutting and sharp claws on the front feet that were evidently designed for tearing out the eyes of victims or adversaries. Hardly less formidable and equally large was the stegosaur, which was sheathed in armor plates from two to three feet in width, and employed as a weapon of offence its powerful tail, armed near the end on both sides with sharp spikes two feet long. This animal walked erect, also, and one of its peculiarities was a great enlargement of the spinal cord at the lower end of the back. In fact this expansion of brain-material, intended to provide for the wagging of the mighty spiked tail, was ten times as big as the brain in the skull itself. Equally large and dangerous were the megalosaur and the dinosaur—their jaws armed with hugh sabre-like teeth—which went about on their hind legs looking for something to devour. Against such fearful foes what chance had the peaceful cetiosaurus and elasmosaurus, dwelling in marshes and shallows, with the bulk of six or eight elephants? Nevertheless, some of the herbivorous land reptiles referred to, like the gigantic horned and armored agathaumas, could make a good fight with the carnivores, and were so well able to defend themselves that they lived and multiplied in the same regions with the latter. But most of these vegetable feeders had no other means of defence than kicking, which they could do with some effectiveness, with their hinder limbs fifteen feet or so in length. Specimens of all these are included in the collection that is to be brought for permanent exhibition. Of course they represent but a few of the countless species of giant beasts that roamed over the earth in droves during this vanished epoch. That was the age when reptiles ran creation. They walked upon land, swam the seas, flew through the air, climbed trees, and did everything that mammals do nowadays. There were bird reptiles and reptilian birds. Some had wings for flying with a spread of twenty-five feet—veritable dragons, in fact. Others, forty feet in length, had paddles for swimming, like a whale's. These latter lived in the seas, though occasionally they came on shore. One species dived to great depths in the ocean, and was most rapacious and predatory. It had enormous eyes to see with in deep water, its head resembling an alligator's. Another kind, with a very long neck, inhabited the shoals and preyed upon the fishes of the shallows. The first serpents, too, belonged in the sea and grew to be forty feet long. They had no poison, but were constrictors like the boa. There were many kinds of crocodiles, fifty feet from snout to tail, whereas the biggest ones now are not more than fifteen feet. During the same period lived the birds with

teeth, which were only discovered a few years ago. Biggest of these were the hesperornis, which stood six feet high and had only rudimentary wings. It did not fly, therefore, but was simply a swimmer and diver, subsisting on fish. The ichthyornis was somewhat similar in appearance and habits, but not much larger than a pigeon. It is supposed that these strange waterfowl were wiped out by the giant swimming lizards, eighty feet long and clad in bony armor plates, which resembled the modern conception of the sea serpent. The turtles should not be forgotten, which attained a length of twenty feet and measured seven feet in height. It is not only the age of reptiles, however, that is represented by the unparalleled collection described. Before that came the epoch of the fishes, when they ran the world and had all creation pretty much to themselves. Of this era likewise the Government has gathered together a vast quantity of fossil relics. The face of the earth did not look then at all as it appears now. Most of what are now called continents had not been upheaved above the ocean. Nearly everywhere was sea, with comparatively small land masses elevated out it. The atmosphere was hot, moist, and loaded with carbonic acid so as to be unbreathable. In the ocean swam enormous armored fish, such as the dinichthys, which was fifteen feet long, and had such tremendous jaws and teeth that it could have bitten a man in two as easily as you would a radish. Later on came sharks of the fiercest type, which must have been as much as seventy feet in length at least. The biggest tooth of a man-eater of to-day is about an inch long, while the teeth of the ancient sharks, which are found in enormous numbers, measure more than six inches. This was the golden age of the scaly tribe. The giant reptiles that appeared on the scene in the subsequent epoch were remarkable for the smallness of their brain cavities. In some of them the brain was so small that it could have been passed without injury through all the vertebræ of the spinal column down as far as the beginning of the tail. All of them were wiped out of existence by the great cataclysm which upheaved the Rocky Mountains, the Alps, and the Himalayas, and brought to a close the Mesozoic epoch. Then came the Age of Mammals, at the end of which we are now, man being the last arrival on the scene. The age of monsters has pretty nearly passed away; only a few remaining, like the elephant and the whale. Small animals with plenty of sense will always survive stupid giants in the long run, because they require less food and know better how to avoid danger. Observe in illustration how the doom of extinction has fallen upon the gigantic mammals which roamed over the earth by myriads only so short a time ago, comparatively speaking, as the beginning of the present era, called Cenozoic. There was the dinoceras, which lived in herds about the lakes, as the deposits show—big as an elephant, but in appearance somewhere between the rhinoceros and the hippopotamus, with three pairs of horns on its head, and huge sabre-like tusks that fitted into sheaths in the lower jaw. More imposing yet was the tinoceras, somewhat similar of aspect, and sixteen feet long. Not less impressive was the megatherium or giant sloth, as large as two elephants, which attained a measurement of eighteen feet, and procured the leaves on which it fed by seating itself upon its mighty haunches and uprooting great trees. Of the dinotherium no complete skeleton has been discovered, but it was doubtless the biggest land mammal that ever lived. A full-grown skull of this earliest of proboscidians, which had long tusks as well as a trunk, measures five feet irom the point of the lower teeth to the top of the head. The brontops, of elephantine size, had a head like an rhinoceras with big horns. Quite as remarkable was the sivatherium—a beast like an antelope, but big as an elephant—with two conical horns on the front of its head, and two immense spreading ones behind. Among birds were waders ten feet in height, such as the dinornis and gastornis. Contemporary with them were the mammoth and the mastodon, the woolly rhinoceros, armadillos nine feet in length, and the sabre-toothed tiger, larger than the greatest lion of to-day. All that is left of these wonders of animal life is found in deposits such as those of the Western lake beds. For years the Government has been engaged in excavating their bones, which are now to make part of what is destined to be the greatest zoological show on earth.

LEUCOCYTES.

THE WHITE CORPUSCLES THE WARDERS OF THE BLOOD.

Our body is composed approximately of thirty billion cells, the primary units of life. Not only are they the material particles out of which our organism is built, but they form the foundation for the functions of all our organs. What we commonly call life is nothing else than the sum of the functions of all the cells. The complicated mechanism of the human body exists and is kept in working order only by the intimate co-operation of a number of separate living beings far transcending our powers of conception. Yet each infinitesimal being lives in and for its individual self and not for the whole mechanism; it breathes, takes sustenance to itself, and gets rid of the used-up material. That such a cell is capable of life as a separate individual can be seen in the amœbas, those smallest of animalcules, which consist of nothing more than a mass of protoplasm enclosed in an extremely thin membrane, exactly like the cells of the human organism. An exceedingly interesting variety of these cells is what are called the leucocytes, the "chimney-sweeps of the blood," as a famous living physiologist has characterized them, which were known in the last century, but whose functions we do not entirely understand to this day. These leucocytes, which are of microscopic size, are present in the blood in the form of "white blood corpuscles," in the proportion of one to every three or four hundred red corpuscles. The proportion is entirely different in consumptives or persons suffering from leucocythemia, who harbor in their blood a great excess of the white corpuscles. This, and not, as many suppose, deficiency of blood, is the true cause of consumption. Leucocytes are found not only in the blood vessels, but also in the spleen, the liver, and many other organs. The construction of the white blood corpuscles is very simple. They consist of a soft, semi-fluid mass called protoplasm, which contains one or two nuclei, and the whole is surrounded by a fine membrane or cell wall They are globular in shape and are larger than the red corpuscles, which have neither nucleus nor membrane. Their movements also are different from those of the red corpuscles, which shoot through the middle of the stream of blood, while the white roll along the wall of the blood-vessel. Sometimes three or four are seen close together, and again they are found widely separated. Like the independent animalcules that have been mentioned, the amœbas, the leucocytes are able to change their shape at any time by forming pseudopods. A part of the mass contracts and throws out an irregular process, which in turn buds into a new one or several. These pseudopods serve the amœbas as a means of taking food and of locomotion, and they perform the same offices for the leucocytes. If these come to a narrow blood-vessel, they elongate themselves and thus slip through, to resume afterward their original form. Besides their ability to change their shape, they possess another very remarkable property that shows what an important part they perform in the animal economy and has justly earned for them the name of "nomad cells." This is the power of leaving the blood-vessels by breaking through their walls. When a leucocyte wants to migrate—the operation takes place in the finest and smallest of the blood-vessels, the capillaries as they are called—it first throws out a kind of pseudopod, a filament of exceeding fineness, which bores its way through the tissue of the wall. When it reaches the outer side, minute granular particles of protoplasm are sent along the thin appendage, and these collect in a small bunch on the outside ol the membrane. This process goes on until the entire leucocyte has passed over to the outer surface of the membrane, whence it pursues its journey into the interior, penetrating the tissues. This faculty, interesting and unique as it is, would not give the leucocytes such physiological importance if it was not supplemented by another equally interesting peculiar property. This consists in their ability to render innocuous any alien substance that has got into the blood-vessels in any way. Whenever a leucocyte comes in contact with such a foreign body it seizes and holds it fast by throwing about it a pseudopod, and then gradually envelops and absorbs it. This is a fact that can be proved by experiment. If we introduce a foreign substance into the blood, for example, fine powdered indigo, we will find that in a comparatively short time, perhaps twenty-four hours, it will disappear entirely from the plasma. The leucocytes have taken it up, loaded themselves with it, as we can see from their altered color, and thus removed it from the blood. They thus cleanse the blood passages, sweep out every kind of refuse, and keep the road always clear for the ceaselessly pulsing vital stream. They will allow no poison as a destroyer of life to gain the mastery in the blood fluid. They will fight with it to the death, and ofttimes their valiant struggle is crowned with splendid success—a human life saved. If the forces of the enemy are stronger than they, still they will never give up the fight till the last of their band has fallen.

GUNNY BRICKS.—Old bagging is being worked up into bricks for artistic decorations.

DEODORIZER.—A few pounds of copperas dissolved in a bucket of water and sprinkled in cesspools or any place emitting foul smells, will purify and sweeten them.

COLD GAME.—Frozen game partakes and absorbs whatever impurities the ice may contain, and everybody knows that the best quality of ice is never used for packing.

NEW MACHINE.—A planing machine for making tooth gearing, which forms the tooth direct out of the solid by a specially shaped cutter, has been brought out by M. Herman Michaelis, of Chemnitz, Saxony, Germany.

DANGEROUS PETS.—A French scientist declares that the domestic pets of the world carry at least thirty per cent. of the common contagious diseases from house to house.

READY FOR USE.—The only proper way to keep a gun barrel in good order is to wash it out with boiling hot water, dry with linen swabs, and oil with vaseline or cylinder oil every time that it is used. It should never be laid aside unattended to for a day or two after firing.

WOMEN PROGRESSING.—The Attorney General of Maine gives an opinion that women may legally hold the position of members on local boards of health in that State. Appointments of women on these boards have been made this spring, and the secretary of one board is a woman.

GOOD RULE.—Rosenberg, Senior—"Simon, my boy, now that you are going into business for yourself, let me gif you von good rule to follow." Rosenberg, Junior—"Vell, fader?" Senior—"It's dis; if your customers don't see vat dey vant, make dem vant what they see."—*Yankee Blade.*

BACTERIOLOGY.—In science a writer says that while as yet we have discovered no way of avoiding contagion which comes to us in the air, we are beginning to find out the important fact that the air does not become contaminated with bacteria unless they are allowed to dry. Recent investigations, he adds, have shown a smaller number of bacteria in the air of a well-kept sewer than in that of a poorly-ventilated school-room.

MONKEY TALK.

UTILIZING THE PHONOGRAPH TO FORMULATE A SIMIAN LANGUAGE.

Professor F. L. Garner writes as follows to the *New Review* (London) for June: I have long believed that each sound uttered by an animal had a meaning which any other animal of the same kind could interpret at once. I regarded the task of learning the monkey tongue as very much the same as learning that of a strange race of mankind—more difficult in the degree of its inferiority, but less in volume. Year by year, as new ideas were revealed to me, I began to realize how great a task was mine. One difficulty was to utter the sounds I heard; another was to recall them; and yet another was to translate them. At last came a revelation. I went to Washington, and proposed to Dr. Frank Baker, Director of the National Zoölogical Garden, the novel experiment of acting as interpreter between two monkeys. The plan was quite simple. We placed in separate rooms two monkeys that had been caged together. A phonograph recorded a few sounds uttered by the female. When the male heard these sounds repeated, his surprise and perplexity were evident. He traced the sounds to the horn from which they came; he thrust his hand into the horn, withdrew it, and peeped into the horn again and again. Having satisfied myself that he recognized the sounds as those of his mate, I proceeded to record some of his sounds, but my success was not fully up to my hopes; yet I secured from him enough to win the attention of his mate, and elicit from her some signs of recognition. And thus, for the first time in the history of philology, the Simian tongue was reduced to record. I also secured phonographic records in the Chicago Zoological Garden, and in the Cincinnati Garden. I studied these, repeating them over and over, until I became quite familiar with the sounds, and improved my utterance of them. Some weeks later I returned to Cincinnati and Chicago, and tried my skill as a linguist with a success far beyond my wildest hopes. I stood by a cage containing a capuchin monkey. I uttered the word, or sound, which I had translated "milk." On repeating it three or four times he answered me very distinctly with the same word, and then turned to a small pan kept in the cage for him to drink from. I repeated the word again, and he placed the pan near the front of the cage and uttered the word. I gave him some milk, which he drank with great zest; then he held up the pan, and repeated the sound some three or four times. I was quite sure he used the same sound each time he wanted milk. I now held a banana in front of the cage, and he at once gave the word which I had translated "to eat." Repeated tests proved to me that he used the same word for apple, carrot, bread, and banana, hence I concluded that it meant "food," or "hunger," as also "to eat." From other experiments I was convinced that the word I had translated "milk" must also mean "water," and also "drink," and probably "thirst." I have never seen a capuchin monkey that did not use these two words. The sounds are very soft and quite flute-like; very difficult to imitate, and impossible to write. They are purely vocal, except faint traces of "h" or "wh" as in the word "who;" a very feeble "w;" and here and there a slight gutteral "ch." To imitate the word which I interpret "food," fix the mouth as if to whistle; draw the tongue far back and try to utter the "who" by blowing. The phonics appear to me to be "wh-u-w," with the consonant elements so faint as to be almost imaginary. In music the tone is F sharp, and this seems to be the vocal pitch of the species, though they have a wide range of voice. The sound I have translated "drink" or thirst is nearly uttered by relaxing and parting the lips, and placing the tongue as it is found in ending the German word "ich," and then trying to utter "ch-e-u-w," making the "ch" like "k," blending the "e" and "u" like slurred tones in music, and suppressing the "w." The consonant elements can barely be detected, and the tone is about an octave higher than that used for "food." My work has been confined chiefly to the capuchin monkey, because he seems to have one of the best defined languages of any of his genus. I have recorded one sound made by the sooty monkey; three by a mandril; five by a white-faced sapajou; and a few of less value. But from the best proofs I have found, I have arrived, as I believe, at some strange facts: 1. The Simian tongue has about eight or nine sounds, which may be changed by modulation into three or four times that number. 2 They seem to be half-way between a whistle and a pure vocal sound, and have a range of four octaves, and, so far as I have tried, they all chord with F sharp. 3. The sound used most is very much like "u"—"oo," in "shoot." The next one something like "e" in "be." So far I find no a, i, or o. 4. Faint traces of consonant sounds can be found in words of low pitch, but they are few and quite feeble. 5. The present state of their speech has been reached by development from a lower form. 6. Each race or kind has its own peculiar tongue, slightly shaded into dialects, and the radical or cardinal sounds do not have the same meanings in all tongues. 7. The words are monsyllabic, ambiguous, and collective, having no negative terms except resentment. 8. The phonic character of their speech is very much the same as that of children in their early efforts to talk, except as regards the pitch. 9. Their language seems to obey the same laws of change and growth as human speech. 10. When caged together one monkey will learn to understand the language of another kind, but does not try to speak it. His replies are in his own vernacular. 11. They use their lips in talking in very much the same way that men do. 12. I think their speech, compared to their physical, mental, and social state, is in about the some relative condition as that of man by the same standard. 13. The more fixed and pronounced the social and gregarious instincts are in any species, the higher the type of its speech. 14. Simians reason from cause to effect, and their reasoning differs from that of man in degree, but not in kind. To reason, they must think, and if it be true that man cannot think without words, it must be so of the monkey; hence, they must formulate those thoughts into words. 15. Words are the audible, and signs the visible, expression of thought, and any voluntary sound made by the vocal organs with a constant meaning is a word. 16. The state of their language seems to correspond with their power to think, and to express their thoughts. I have here given only a few of many trials which I have made to solve the problem of the simian tongue, and while I have gone only a step, I believe that I have found a clue to the great secret of speech, and pointed out the way that leads to its solution.

COMMUNICATING WITH MARS.

A WOMAN'S BEQUEST THAT SUGGESTS THE OLD "MOON HOAX" OF LOCKE.

A Paris cablegram says a French nun has bequeathed 100,000 francs to the Academy of Sciences, to be given as a prize to any one who shall discover any means of communicating with another world, planet, or star. The planet Mars was suggested in the will as the most convenient heavenly body on which to make the experiment. "This proposition may seem ridiculous, but it is not any more so than the idea of James Lick, the founder of the Lick Observatory," said a man well versed in starry lore to a *Chicago Tribune* writer. "The Lick bequest to build the great telescope was intended to establish the fact whether or not the moon is inhabited. Now let us consider the difficulties in the way of this project. The distance of the earth from the moon may be stated in round numbers as 240,000 miles. It is a fact recognized in military science that a man can be fairly distinguished by the eye at a mile's distance. In making calculations regarding vision it is the general rule to estimate that to be seen a mile away an object must be half a yard wide. The best telescope has a magnifying power of 2,000 diameters. Half the distance to the moon is 120,000 miles. Divide this by 2,000, the magnifying power of the glass, and you get sixty yards as the minimum size of an object in the moon discernible by the aid of the telescope from the earth. So an object must be 180 feet wide or thick to be more than an appreciable dot. I have made the most liberal allowances in this computation. The atmospheric conditions must be perfect, and 2,000 is an unusually high power to be used by an astronomer. If an object must be 180 feet thick to be seen from the earth on the moon, it would be best to make it 200 feet. To give the inhabitants of the moon an idea that there are intelligent beings on earth, it would be necessary to place, say, three objects in view of the moon's people. Let them remain for a time arranged at the angles of a triangle, then they might be changed so as to be in a straight line. The man in the moon, seeing these phenomena, might conclude that there were intelligent beings on earth, and arrange for some corresponding signal to the inhabitants of earth. But while this seems possible, it shows how preposterous would be the attempt to determine with the most powerful telescope now in use whether the moon is inhabited. Now, as to the proposed communication with Mars. At the time when Mars and the earth are nearest to each other—are in perihelion—the distance is in round numbers 35,000,000 miles. Take half this distance, and you have 17,500,000 as the number of yards that represents the size of on object in Mars that could be seen that distance with the naked eye. Divide this by 2.000, the power of the biggest telescope, and you have 8,750 the size of the smallest object plainly discernible at such a distance with the telescope. This is equal to about five miles. An object in the planet Mars could be perceived as a little larger than a dot with the aid of the largest refractor and under the most favorable, in fact absolutely perfect atmospheric and other conditions, if it was five miles in diameter. This is when the planet is nearest to us. On the other hand, at that time nothing on the earth could be discerned from Mars, because the earth would be in a straight line between the two and in the blaze of the sun's light. An inhabitant of that planet would have to wait until the earth was in some other part of its orbit, and the distance between the earth and Mars would then be many times as great as in perihelion. So it would be necessary to construct an object, to be discernible on the earth from Mars, say twenty miles in diameter. It might be circular in form. Other structures not inferior in size would have to be erected at distances of not less than twenty miles from each other. Then, after these had remained for a time, their relative positions might be changed. These bodies, moreover, to be clearly distinguished from the surface of Mars, must be intensely luminous. A solid ball of electric light twenty miles in diameter would suffice. Considering the size of the structures required, their distance from each other, and the necessity of changing their places to indicate to a man in Mars that these luminous structures were the result of intelligent action and not natural phenomena, the sum bequeathed by the French nun may be seen to be greatly inadequate. The Academy of Sciences at Paris may for this reason refuse to accept the bequest. If the sum were offered for a prize essay on some plan for accomplishing communication with a sister sphere, it would be more reasonable. In all the above computations it must not be forgotten that all the conditions must be favorable, the atmosphere as well as the relative positions of the earth and Mars. Such conditions happen only once in a great while."

CHINESE SCHOLARS.

WHAT CONSTITUTES THE EDUCATION OF THE CHINESE "LITERATI."

A Chinese Mandarin, General Tcheng-Ki-Tong, gives the following interesting account of the Chinese higher education, in a communication to the *Asiatic Quarterly Review* for June: It is by no means uncommon to hear our Mandarin class, or "literati," spoken of as an all-powerful caste, in full possession of the country, and governing, according to its own good pleasure, other castes that yield a passive obedience to it, without any intelligence, and, above all without any influence. Nothing can be more unjunst to our "literati" than to describe them thus, for they are far from constituting a class separated from the rest of the nation. The "literati," in fact, are not recruited specially from among any certain number of families, for which are reserved the special appointments of administration and government. Favor has nothing whatever to do with it. The selection, on the contrary, is a most severe one, taking in the entire Chinese territory, and drawing out from the whole mass of the Chinese people the most capable individuals, to form of them the members of the corps of instructors and of the functionaries of the State. It is the examinations, open to all, which establish this selection. Neither birth nor fortune confer the claim to aspire to the title of a "literate." Nothing but the capacity of the individual can cause him to be admitted. There is no such thing, therefore, as "class" in this "personnel," which is constantly drawn from the inexhaustible reserve of our hundreds of millions of human beings, and which renews itself every year by new comers, recruited without distinction from all the social strata of the country. This popular origin has, moreover, in our eyes an enormous advantage. By the infusion constantly of fresh blood, our administration is always being rejuvenated, remains by that alone in permanent contract with the people, and can neither ignore nor forget the wants and asperations of the governed. With us, the son of a shopkeeper, of a mechanic, or of a laboring man can become a "literate" on the same conditions as the son of a "literate." The young man whose father modestly cultivates his patch of rice in some distant province, comes to Pekin in order to pass his last examinations. If he succeeds, he becomes at once, by this fact alone, one of the first of the class of "literates," and henceforth the highest appointments in the State await him. No "literate" will ever look upon, nor will he try to look upon, shopkeepers, artisans, or field laborers as belonging to a class less honorable than his own. Such an order of ideas would be perfectly strange to us, and I congratulate my country upon the fact. Instruction is not compulsory in China; nevertheless it is very rare to meet with an illiterate person. Our elementary instruction is, in fact, much more extensive than in Europe, the result of the greater difficulties attached to the learning of our writing, and to the multiplicity of our ideographic characters, acquaintance with which makes necessary long and careful application. As soon as a child is old enough to receive instruction, it is sent to some school, kept in a modest room, by a "literate" who, having acquired a very complete education, has not yet been successful in passing the examinations. Here the little boy learns to read, to trace his letters, to understand and to retain sundry precepts taken from our classics. By and by the pupil attacks literature, familiarizes himself with poetry, and anon, with history. Simultaneously he begins to learn drawing and painting in water-colors. He has to store his memory with a considerable number of literary extracts, and so to acquire gradually the style of our great writers. All this work has taken some years to get through, and the student prepares for his first examination, which corresponds to your bachelor's degree. Those who pass this, prepare for the second examination, and then for the third or doctor's degree. Successive eliminations reduce the candidates for the last degree to a very small number. At this examination, which is held every third year in the capital, out of ten thousand candidates, not more than two hundred succeed in passing. The studies of those examined have included, besides history and general literature, our practical philosophy, which is, in one word, the theory of the art of governing. Until very lately the sciences have found but little room among these studies; but during the last thirty years we have made the necessary effort in this direction, so that our special schools, combined with the missions of students sent abroad, suffice to bring us up to the level of our requirements. Our ancient national programme perfectly fulfills the the object for which we intended it. In effect, this programme develops, in the highest degree, public and private morality. It inculcates upon us, with the worship of the family and respect for our parents, the love of our neighbor and the desire to be happy through the happiness of all. We need not be moved by the reproach, which is sometimes made, of living in the past. If our "past" had been retrograde, I could understand the reproach. On the contrary, however, this remote past has bequeathed to us a doctrine of incessant progress, admirably suited to our natural genius. It has taught us that the family should always keep the happiness of all its members in view, that each individual should interest himself in the lot of all his fellow human beings—in a word, that the supreme object of government is the happiness of the people.

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

July.

MEAT.—Beef, lamb, mutton, ham, kidneys, liver, sausage, veal.

GAME AND POULTRY.—Pigeon, chicken, duck.

FISH.—Anchovy, bass, bluefish, blackfish, cod, eels, clams, flounder, haddock, halibut, herring, lobsters, mackerel, mussels, perch, porgie, prawn, salmon, shad, turtle, trout, sturgeon, whiting, weak-fish.

VEGETABLES. — Beans, cucumbers, carrots, cauliflower, egg-plant, lettuce, onions, parsley, parsnips, potatoes, shallots, spinach, turnips, radish, rhubarb, corn, beets.

FRUITS.—Cherries, strawberries, raspberries, huckleberries, melons, gooseberries, blackberries, peaches, pears, tamarinds, bananas, pineapples.

PRACTICAL RECIPES.

RICE SOUP.—Wash four heaping tablespoonfuls of rice thoroughly and rub it dry; put it in a saucepan, pour a pint of cold water on it and let it heat very gradually, then add a pint of boiling water, and when it has cooked up pretty well add another pint of boiling water, using three pints of water in all. Beat the yolks of two eggs with four tablespoonfuls rich cream, Put a teaspoonful of butter into the soup and seasonings of salt and pepper; add the cream and eggs the last thing, let it cook for a minute, stirring all the time and serve at once.

GRIDDLE CAKES.—Make a batter of two cups dry biscuits crumbed fine, two cups milk, three eggs beaten separately, one cup flour, two tablespoonfuls of melted lard, salt. Mix perfectly smooth; put in the egg whites the last thing.

CREAM MAYONNAISE.—Put into a deep dish half a teaspoon of salt, a little white pepper, a little sugar and the yolks of three eggs. Beat them until very light, then beat in gradually, a few drops at a time, a cup of olive oil, thinned out a little with vinegar. Whip a cup of cream very stiff and just before sending to the table, beat it lightly into the dressing. If liked, a few drops of onion juice may be added before the cream is put in, but if only a very delicate flavor of onion is desired simply rub the dish in which you make the dressing with a cut onion.

PANNED OYSTERS.—Put twenty-five oysters with their juice into a saucepan over the fire, add two tablespoonfuls of butter, a little salt and cayenne pepper; sift in two large spoonfuls cracker crumbs and stir for a moment; let them boil up, pour into a tureen and serve.

LITTLE CINNAMON CAKES.—Beat together one half pound butter and one half pound sugar, add six eggs, eight cups sifted flour in which three teaspoonfuls of baking powder are mixed, a little salt and a teaspoonful of cinnamon. Roll very thin, cut out, sprinkle with sugar and cinnamon and bake. If the dough seems too stiff add a little milk.

DEVILED OYSTERS ON TOAST.—Mix together a heaping saltspoonful of mustard flour, half a saltspoon each of white pepper and salt, and the yolk of one egg. Dip six oysters in the paste, then in fine crumbs and broil over a moderate fire. When done, arrange on toast and squeeze over them the juice of half a lemon.

RATAFIA CAKES.—Pound together six ounces of sweet and two ounces of bitter almonds, blanched and dried, add as you pound them the whites of four or five eggs; when they are a smooth paste mix thoroughly with them a pound of powdered sugar. Lay sheets of white paper on baking tins and pour little drops of the mixture, the size of a nickle, on them half an inch apart. Sift fine sugar over them and bake in a moderate oven. Do not remove the cakes from the paper until they are cold.

THOUGHT AND LANGUAGE.

SOME SPECULATIONS ON THE EVOLUTION OF SPEECH.

Intuitional thinking is independent of language. To think is to construct an ideal whole according to a more or less definite plan. Thought appears to be independent of language and other expressive signs, only when the relations constituent of this ideal whole are capable of being presented in the focus of consciousness as immediate objects of vigorous and sustained attention. Now the effect of a vigorous and sustained attention is to make its immediate object distinct with the distinctness of a definite image, such as might be presented in actual sense perception. Hence it follows that thought, apart from words, can construct only such ideal wholes as are capable of being intuited. Independently of language the relations between the successive objects of attention which compose a train of thought must be, in the main, concrete and definite relations in space and time. Thinking of this kind we may, following the example of Steinthal, call intuitional thinking. Intuitional thinking may require strenuous and persistent intellectual exertion and high intellectual power. In playing chess, in manipulating algebraic symbols, in constructing a piece of machinery, words for the most part are not required. Aphasic patients, who have almost entirely lost command of language, may yet retain intact their skill at chess or cards. Since it is possible to think without the help of language, it is, therefore, possible to generalize without the help of language, for all thinking involves generalization. But though apart from language we can generalize with reference to the objects of our thought, yet these objects are not themselves general. Apperception, attention, and proportional production construct an ideal whole, according to a plan which is general, but the resulting ideal structure has the particularity of a percept. It is an intuitional whole, not a conceptional whole. This is and must be so, because the universal as such can never become an immediate object of attention. I propose to call the signs of lan-

guage, and all signs which fulfil a similar function, expressive signs. Under this head are included the natural signs of gesture language, the conventional signs of the manual language taught to deaf mutes, and all kinds of written language, as well as articulate speech. Expressive signs must be carefully distinguished (1) from suggestive signs, (2) from substitute signs. A suggestive sign merely calls up a certain idea which may then be attended to independently of it. It has fulfilled its purpose, and becomes of no further avail so soon as it has suggested its meaning. It is a mnemonic help. A substitute sign, on the contrary, is a counter which takes the place of its meaning; so long as it fulfils its representative function it renders useless all reference to that which it represents. The counters are manipulated according to certain rules of operation until a certain result is reached which is then interpreted. Algebraical and arithmetical symbols are to a great extent used as mere substitute signs. The same is true of the symbols used in formal logic. By means of expressive signs, mental systems which could otherwise only serve to apperceive objects of attention, become themselves transformed into objects of attention, apperceived by more comprehensive systems. In this way language objectifies what would otherwise remain relatively subjective—a factor operative in the process of thinking but not an object of thought—a condition of understanding, but not itself understood. Thus the development of language is a development of self-consciousness. Gesture language is, like conventional language, an instrument of conceptual thinking. The natural signs which compare it are either demonstrative or imitative. The demonstrative consists in some way of drawing attention to an object actually present, or to be found in a certain direction. It is obvious that such indications are not expressive signs unless they form part of a context. This context is supplied by imitative gestures. The imitation consists mainly in tracing the outline of objects in the air, or in copying characteristic features of an action. A deaf mute, it may be, wants a drink of water; he sees neither water nor drinking glass in the room, so that he cannot point to the one nor fetch the other. He takes some one by the hand in order to lead him to the place where water is. The person to whom this appeal is made refuses to move. The deaf mute is perplexed and embarrassed. He adopts the device of pointing to his mouth. This is something more than a practical expedient. It is an expressive sign, at least in the germ, such as is not, so far as I know, used by even the most intelligent animals. But the sign is ambiguous. The person addressed may bring him something to eat instead of something to drink. He is thus driven to define his meaning by a combination of gestures—a context of natural signs. He directs his hand towards his mouth again, but now he curves it as though he held a glass, at the same time imitating the act of drinking. At last he has made himself understood, and a ray of light penetrates his intellectual and moral being. This movement, as it were, transforms him into a human being, whereas his previous pointing had been merely animal language.—*London Mind.*

AMERICAN ANALYST.—$1.00 per year.



There is no place like home

—when *Pearline* is used in it. There is no place about home where *Pearline* can't be used.

Pearline takes the hard work and drudgery out of —keeping a home clean. It is next to having the washing and cleaning done for you, and well done at that.

It washes everything that can be washed. It cleans paint, marble, carpets, hangings—in fact everything cleanable.

It is a luxury in the bath. It is emphatically without harm to person or things. With *Pearline* you have rest; it rests with you to have *Pearline.*

Your Home is probably invaded by peddlers, who claim the stuff they offer is Pearline, "the same as" Pearline, or "as good as" Pearline. IT'S FALSE—Pearline has no equal, and is never peddled. 238 JAMES PYLE, New York.

Buffalo Lithia Water, Spring No. 2, in Bright's Disease, Gout, Stone in the Bladder, and Diseases Generally of Uric Acid Diathesis, Etc., Etc.

DR. WM. A. HAMMOND, of Washington, D. C., Surgeon General U. S. Army (retired), Professor of Diseases of the Mind and Nervous System in the University of New York, etc.

"I have for some time made use of the BUFFALO LITHIA WATER in cases of AFFECTIONS of the NERVOUS SYSTEM, complicated with BRIGHT'S DISEASE OF THE KIDNEYS or with a GOUTY DIATHESIS. *The results have been eminently satisfactory.* Lithia has for many years *been a favorite with me in like cases, but the* BUFFALO WATER CERTAINLY ACTS BETTER THAN ANY EXTEMPORANEOUS SOLUTION of THE LITHIA SALTS, and is, moreover, better borne by the stomach. I also often prescribe it in those cases of CEREBRAL HYPERÆMIA resulting from OVER MENTAL WORK—in which the condition called NERVOUS DYSPEPSIA exists—*and generally with* MARKED BENEFIT."

DR. WM. B. TOWLES, Professor of Anatomy and Materia Medica, in the Medical Department of the University of Virginia.

"BUFFALO LITHIA SPRINGS, No. 2, belongs to the ALKALINE or, *perhaps, to the* ALKALINE SALINE Class, *for it has proved far more efficacious in many diseased conditions than any of the simple* ALKALINE waters.

"*I feel no hesitancy whatever in saying that in* GOUT, RHEUMATIC GOUT, RHEUMATISM, STONE *in the* BLADDER, and in all diseases of URIC ACID DIATHESIS, *I know of no remedy at all comparable to it.*

"*Its effects are marked in causing a disappearance of* ALBUMEN *from the urine. In a* single case of BRIGHT'S DISEASE *of the* KIDNEYS, I witnessed *decided beneficial results from its use, and from its action in this case I should have great confidence in it as a remedy in certain stages of this disease.* In DYSPEPSIA, especially that form of it in which there *is an excessive production of* ACID *during the process of nutrition,* in some of the PECULIAR AFFECTIONS *of* WOMEN, notably in SUPPRESSION of the MENSES, and in CHRONIC MALARIAL POISONING, etc., I have found it highly efficacious."

DR. G. HALSTEAD BOYLAND, late Professor of Surgery, Baltimore Medical College, late Surgeon French Army (Decorated), Member Baltimore Academy of Medicine, Member of American Medical Association.

"In BRIGHT'S DISEASE of the KIDNEYS, ACUTE or CHRONIC, BUFFALO LITHIA WATER, Spring No. 2, is, in my experience, *without a rival,* whether in the PARENCHYMATOUS form or INTERSTITIAL NEPHRITIS. In cases in which the ALBUMEN in the URINE reached as high as 50 per cent., I have known it under a course of this water gradually diminish and finally disappear, at the same time other alarming symptoms were relieved and the sufferers restored to health.

"In STONE in the BLADDER of the RED LITHIC ACID and the WHITE PHOSPHATIC DEPOSIT, the SOLVENT power of this water is *unmistakable.*"

Water in cases of one dozen half gallon bottles, $5.00 f. o. b. here.

THOS. F. GOODE, Proprietor, BUFFALO LITHIA SPRINGS, VA.

TRUE AND FALSE BLOOD-PURIFIERS.

The expression "blood-purifier" is as old as civilization. It occurs in nearly every great language, and while not scientifically accurate, is a significant and useful phrase to convey a series of profound truths. Of late years it has been used, as if it were literally correct, by certain manufacturers of proprietary medicines. They speak of their products as though they were chemicals (and in many cases they are), which could be poured into the circulation and either dissolve out disease or else incorporate health into ailing tissues. It is hardly needful to add that such pretensions are at utter variance with modern pathology and truth.

What is a true blood-purifier? To explain the phrase it is necessary to understand the nature and action of the blood. This, starting from the heart, is first forced through the lungs, where it is put into close and minute contact with the air. The oxygen is absorbed and attacks the worn-out matter floating or dissolved in the blood, and probably, also, some of the normal cells and corpuscles. In case the oxygenation is insufficient, much matter is left that would otherwise be destroyed, and the blood is said to be impure. The process mentioned generates heat and energy, and enables the body to perform its various nervous, muscular, and other activities, all of which, summed up, constitute life. The blood returns to the heart, and thence passes into the circulation. It takes up the worn-out particles of every tissue, and leaves new ones behind. It passes the kidneys, where superfluous and many nitrogenous compounds are strained off, and finally reaches the heart again. In its progress through the arteries and veins it may not take up as much of the worn-out matter as it should. The tissue then begins to enter a diseased condition. It may take up this effete material, but leave none that is new. The result is a wasting away of the part or organ. It may be so poor in quality or deficient in quantity that it only does half work. The person is then said to be anæmic. Sometimes when the oxygen has not destroyed enough cells in the blood, these are deposited in various parts of the body; and so sometimes when the kidneys have not removed objectionable elements, these are similarly deposited by the life-current. When these elements take the form of crystals of uric acid and uric salts, gout and rheumatism occur. When they take the form of lime or calcareous salts, gouty accretions, brittleness of the bones, chronic headaches, stone, and gravel are the painful consequences. All of these are natural products, and result from the natural chemical action of the blood under special conditions. It is easily seen, therefore, that any preparation which claims to merely purify the blood is, on its own showing, worthless. If it did what it claimed, it would be but for a moment. As the blood changes perpetually, it might be normal one minute, and then, under morbid conditions, be impure and poisonous five minutes afterwards. A true blood-purifier is one which destroys or expels the impurities of the blood by putting the vital functions into normal action. The best one known to the medical world to-day is Ayer's Sarsaparilla, a simple scientific preparation of sarsaparilla, yellow dock, and other ingredients, which any one can make for himself who has the chemical knowledge and the scientific apparatus. It acts upon the system at large. It stimulates the nerves, especially those of the secondary system which control the great organs. In this manner it induces the heart to beat with more power, the lungs to inhale more oxygen and exhale more carbonic acid, the kidneys to excrete not more water, but more of the worn-out cells and nitrogenous compounds, the bowels to move more freely and frequently, and the pores to discharge more invisible transpiration. In this manner it destroys the morbid conditions under which the blood and system had become impure, and thus indirectly Ayer's Sarsaparilla purifies both the blood and system. Sunlight and exercise, light diet and aperients, travel and pleasant companions, are all conducive to health. But to change from sickness to a normal condition of the body, and to enjoy the health, strength, buoyancy, and vitality which belong to it, demands, in addition to the factors named, the systematic use of Ayer's matchless preparation.

Exhaustion

Horsford's Acid Phosphate.

The phosphates of the system are consumed with every effort, and exhaustion usually indicates a lack of supply. The Acid Phosphate supplies the phosphates, thereby relieving exhaustion, and increasing the capacity for labor. Pleasant to the taste.

Dr. A. N. KROUT, Van Wert, O., says: "Decidedly beneficial in nervous exhaustion."

Dr. S. T. NEWMAN, St. Louis, Mo., says: "A remedy of great service in many forms of exhaustion."

DESCRIPTIVE PAMPHLET FREE.

RUMFORD CHEMICAL WORKS,
PROVIDENCE, R. I.

BEWARE OF SUBSTITUTES AND IMITATIONS.

CAUTION:—Be sure the word "Horsford's" is *printed* on the label. All others are spurious. Never sold in bulk.

BUSINESS NOTES.

WHAT'S IN A NAME.

Mrs. Newed: "I always put some Pearline in my wash water. Do you ever use any?"

Mrs. Oldun: "Oh, yes, Pyle's."—*The King's Jester.*

TEA.

Tea which makes the cup that cheers and does not inebriate is an uncertain quantity. It is one of the most difficult articles to judge of, and therefore those who want to be sure of getting the best article for their money would do well to apply to a large and well-known house whose capital is ample, experience large and character established. We know of none who fill this description better than the Great American Tea Company of New York, whose advertisement appears in another column.

IMPORTANT TUNNEL.—The greatest engineering feat in the history of the anthracite coal mining is about to begin. It is the commencement of what will be known as the Jeddo Tunnel, which will be driven for the purpose of draining the flooded mines of Jeddo and Harleigh. It will be constructed from Butler Valley, Pa., to the bottom of Ebervade mammoth vein, a distance of three miles, through solid rock, to be eight feet square in the clear. The scheme of tunneling through the mountain first occurred to John Markle, who is to be president of the company, which will bear the title of Jeddo Tunnel Co., Limited. It will open an inexhaustible supply of coal, and furnish employment for thousands of people for many years to come. It will also serve the double purpose of draining all the collieries in the valley.—*Scientific American.*

ORIGINAL. No. 26.

Breakfast Fruit Cake

BY MARION HARLAND.

1 quart of flour, 2 cups of milk, 2 tablespoonfuls of butter, 1 tablespoonful of lard, ½ teaspoonful salt, 1 quart of strawberries, huckleberries, blackberries or raspberries, ½ cup of sugar, 2 teaspoonfuls of Cleveland's baking powder.

Sift flour, baking powder and salt together, chop in the shortening, stir in the milk with a wooden spoon. The dough should be just stiff enough to handle. Roll into two sheets, line a baking pan with one, put in the berries, strew with sugar, lay on the other sheet and bake. Cut into squares, split and eat hot with sugar and butter.

Use only Cleveland's baking powder, the proportions are made for that.



The leavening power of Cleveland's Baking Powder comes from cream of tartar with soda, nothing else; that is why Cleveland's is perfectly wholesome, leavens most, and leavens best.

25 CTS PISO'S CURE FOR CURES WHERE ALL ELSE FAILS. Best Cough Syrup. Tastes good. Use in time. Sold by druggists. CONSUMPTION 25 CTS

Fine Table Wines

From our Celebrated Orleans Vineyard.

Árpád Haraszthy & Co.

Producers of the

ECLIPSE

CHAMPAGNE,

530 Washington St.

SAN FRANCISCO.

GENERAL AGENCIES:

NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOS. H. R. PEBBLES' SONS CO., 73 West Fourth Street.
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.

PURE PEPSIN

In Powder and Scale.

MANUFACTURED BY

ARMOUR & COMPANY, Chicago.

Guaranteed free from adulteration or make-weights; of excellent physical properties and high digestive power.

Under similar conditions, **ARMOUR'S PEPSIN** will exhibit greater activity than any other pepsin now before the profession.

The Manufacturers will be pleased to supply members of the Medical Profession with samples of their Pepsin, and with full details regarding digestive strength, if desired.

SEE PAGE 368 FOR VALUABLE OFFER.

WATCHES.

EVERY one wants a watch, and naturally a good watch that keeps accurate time, presents a handsome appearance, and is inexpensive. If such a watch can be found of American manufacture, it is an additional appeal to our patriotism. Just such a watch as this ideal THE ANALYST PUBLISHING COMPANY is enabled to offer as a Premium to its readers. Having some large advertising contracts we have been enabled to procure the movements of the manufacture of the best known American watch factories, namely, the Waltham, Elgin, Hampden and Illinois Watch Companies. These movements are adapted for both ladies' and gentlemen's watches, and are warranted by the makers. These movements have seven jewels, patent lever movement, chronometer balance, patent safety pinion, sunk hard-enameled dial, straight line visible palette, stem winders, hand set; in fact, contain all the latest improvements and can be readily cleaned or repaired by any ordinary good watchmaker. They can be regulated to run as close as any movement.



It is needless to say that to case these movements in solid gold cases would make them too expensive, yet they are cased in what are known as gold filled or stiffened "Ladd" cases, and are warranted to be 14 karat gold, made from two sheets of 14 karat gold overlaying fine composition metal, with regular jointed caps, covers and bezels, and to wear at least five years. They are not plated, nor rolled gold, but actual 14 karat gold cases, thin of course, but stiffened and strengthened by being filled with this fine composition metal. They are finished in the same manner, engine turned and engraved as solid gold watches, and wear and look just the same. No one but an expert can tell them from a solid gold watch. These watches are made both open face and hunting case style, in gentlemen's or ladies' sizes. For gentlemen we recommend plain engine-turned cases; for ladies, a handsomely engraved case.

How to Obtain One of these Watches.

These watches are not to be purchased from us at any price. Send us a club of 25 subscribers to the AMERICAN ANALYST, and $25, the regular subscription price, and one of these watches (your choice of style and size) will be immediately forwarded, post-paid and registered, to your address. You need not wait until you have your 25 subscribers all together, but forward them as you get them and they will be credited to you, and when the number is complete the watch will be sent. A subscription for two or three years will be counted as two or three subscribers.

As these watches are retailed by jewelers at not less than $25, it will be seen that we are offering a real premium with the sole object of increasing our circulation, and that by taking advantage of our offer any one can obtain a good, reliable and handsome watch without cost. As the number of these watches at this price is limited, it is advisable to take steps at once to procure a bargain.

THE ANALYST PUBLISHING CO., 19 PARK PLACE, NEW YORK.

BICYCLES

GIVEN AWAY TO BOYS AND GIRLS!

AN OPPORTUNITY OPEN TO ALL.

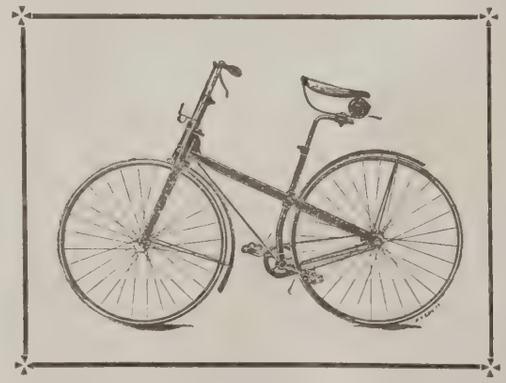
The Analyst Publishing Company being desirous of largely increasing their subscription list, will furnish every one with a beautiful Safety Bicycle, ABSOLUTELY FREE, in return for a few hours' canvassing.

To every boy and girl who secures 75 subscribers for the American Analyst at $75, we will give a splendid

$40.00

NONPAREIL

SAFETY BICYCLE.



These bicycles are adapted in size to boys, but are strong enough to carry a man. A boy's bicycle should be a strong one. They are manufactured by the OVERMAN WHEEL CO., the makers of the celebrated VICTOR Bicycle, and have the full guarantee of the makers.

The following is a brief description of the NONPAREIL SAFETY; 26-inch wheels; ball bearing all around, including pedals; solid crescent rims; double tangent spokes; three-fourths inch tires; cranks, three throw, $4\frac{1}{4}$ to $5\frac{3}{4}$ inches; guards to both wheels; tool-bag, oiler and wrench. Finished in bright enamel, all exposed metal heavy nickel-plate on copper.

In selecting these machines as a premium, we have disregarded cheapness and selected a Bicycle which is serviceable, and the makers of which have an established reputation for building the best Bicycle that money, machinery and brains can produce. We are actually furnishing the Bicycles and Papers at less than cost, but hope by stimulating active and successful canvassing, and thus enlarging our subscription lists, to make an eventual profit. We positively guarantee these bicycles to be just as here represented. They will be shipped by express f. o. b. in New York.

Subscription orders must be made out plainly and legibly, and sent as fast as secured, addressed to

THE ANALYST PUBLISHING CO., 19 Park Place, New York.

ONE YEAR FREE.

If you will send us the addresses of Twenty-five Ladies in your neighborhood to whom we can send sample copies of the **AMERICAN ANALYST,** we will send this paper to you free for One Year; or, for Fifteen names, Six Months; or, for Ten names, Three Months. We do this because our past experience assures us that any lady who once becomes acquainted with the value of the **AMERICAN ANALYST,** continues to subscribe for it. We also offer valuable premiums for raising clubs.

HAMMOND'S

CELEBRATED

Calumet Oleomargarine

Strictly pure, cheap and healthful.

Ask your grocer for it.

Put up in packages of all sizes, also prints and rolls.

C. H. HAMMOND CO.,

607 to 615 THE ROOKERY,

CHICAGO.

Also offices at Boston, South Omaha, Neb., and Hammond, Ind.

We shall be glad to supply our readers with any periodical published at club rates.

Send us a postal naming periodical and we will quote you prices.

ANALYST PUBLISHING CO.,
19 Park Place,
New York.

HARTSHORN'S SELF-ACTING SHADE ROLLERS

NOTICE SCRIPT NAME OF Stewart Hartshorn ON LABEL, AND GET THE GENUINE HARTSHORN

GOLD MEDAL, PARIS 1878.

W. BAKER & Co.'s Breakfast Cocoa



from which the excess of oil has been removed,

Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

THURSTON'S IVORY PEARL TOOTH POWDER
WILL KEEP THE TEETH IN PERFECT CONDITION AND THE GUMS HEALTHY.
Price 25 & 50 Cents PER BOTTLE.

LADY AGENTS WANTED.

I have a medical specialty for ladies use, which is one of the best selling articles in the country. You can make a good income handling it, and at the same time be doing your sex a great benefit. Write me at once for full information and exclusive territory. If you wish a sample sent enclose 12 cents postage. Dr. H. H. Jackson, 103 State Street, Chicago.

DETECTIVE! WE WANT A MAN IN every **locality** to act as **Private Detective** under our instructions. Send stamp for particulars.
WASHINGTON DETECTIVE AGENCY,
Box 787. Washington, Iowa.

We can save you Fifty Dollars when you Build. See



A complete set of Plans to build from, simply state about price of dwelling desired. 25 cts. in stamps. Our book "Beautiful Homes," 25 cts. Our monthly book "The National Builder," 25 cts. Address
The National Builder, Adams Exp. Bldg., Chicago, Ill.

TEAS

REVOLUTION IN PRICES.

Direct from TEA GROWERS to TEA POT.

Finest Teas Imported.

Send in your orders at once. On $20 00 Tea and Baking Powder orders, we will allow you a **Complimentary,** in any kind of Tea you may select, equal to **25** per cent, and **Pay all Express Charges.** This is an unprecedented offer. Remember we are the **"Old Reliable,"** THE GREAT AMERICAN TEA COMPANY Established 1861. No discounts, No Premiums, No Panels.

PRICES OF TEAS & BAKING POWDER.

OOLONG,	30, 35, 40, 50, 60, best 65 cts. per lb.
MIXED,	30, 35, 40, 50, 60, best 65 " "
JAPAN,	35, 40, 50, 60, 70, 80, best 90 " "
ENGLISH BREAKFAST,	35, 40, 50, 60, 70, 80, best 90 " "
YOUNG HYSON,	35, 40, 50, 60, 70, 80, best 90 " "
IMPERIAL,	35, 40, 50, 60, 70, 80, best 90 " "
GUNPOWDER,	50, 60, 70, 80, 90, best 1.00 "
BASKET FIRED JAPAN,	50, 60, 70, 80, best 90 " "
CONGOU ENGLISH BREAKFAST,	50, 70, best 90 " "
SOUCHONG "	" 50, 70, best 90 " "
FORMOSA OOLONG,	50, best 65 " "
ORANGE PEKOE,	50, best 70 " "
ASSAM,	50, best 70 " "
BAKING POWDER, in One Pound Tin Cans,	45 cts. per can.
BAKING POWDER, in Half-pound Tin Cans,	25 " "

All goods warranted to give perfect satisfaction, or they can be returned and exchanged or money refunded, and all expenses paid by us.

THE GREAT AMERICAN TEA COMPANY,

— IMPORTERS, —

31 & 33 Vesey St., P. O. Box 289. New York.

N. B.—Only inducements are *Best Goods* at *Lowest Prices.*

PUBLICATIONS OF THE

ANALYST PUBLISHING CO.

THE AMERICAN ANALYST.
Weekly. Every Thursday. $1 per year.

THE ROOFER, TINNER AND SHEET-IRON WORKER.
Monthly. 15th each month, $1 per year.

THE LEATHER MANUFACTURER.
Monthly. 1st each month. $3 per year.

Reliable agents and representatives wanted everywhere on liberal terms. Address

ANALYST PUBLISHING CO.
19 PARK PLACE, NEW YORK.

"BILLET"

are

Carefully Selected

French Sardines,

Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS.



We Can Save You Fifty Dollars When You Build.

If you are thinking of building a home, here is an opportunity to secure one or several designs of houses which will aid you in deciding just what you want.

PLANS READY TO BUILD FROM

ONLY 25 CTS. EACH

Or Five Sets for One Dollar.

The designs given below to select from are practical and are drawn to a large scale by Geo. O. Garnsey, architect for THE NATIONAL BUILDER. Each one consists of a large, beautifully colored picture of a front elevation, including the floor plans, the details, the specifications, and carefully prepared estimates of cost, and all ready to build from. By a special premium arrangement we are enabled to sell these plans at the above extremely low price. **Specify number of Design.** Send all orders to

THE ANALYST PUBLISHING CO.,

No. 19 PARK PLACE, NEW YORK CITY.

No. 2. **Clover Cottage.** Neat, cosy and modern. Cost, $1,960.

No. 3. **6-Room Elegant Brick Residence.** Suitable for city or country; Handsome Front, Good Basement, etc. Cost, $3,500.

No. 4. **6-Room Modern Residence.** Handsome Front, with broad circular Veranda. Cost, $3,000.

No. 5. **Cheap 5-Room Genteel Cottage:** With Reception Hall, 9x12, and good Basement. Cost, $2,000.

No. 6. **8-Room Residence.** Handsome Front, neat Porch, etc. One of a series of residences much in demand. Cost, $3,000.

No. 10. **Bank and Store Fronts.** Showing different styles of Show Windows, and highly Ornamented Fronts. Two designs. Cost, $1,613 and $1,325.

No. 17. **Double City Flat Building.** Six rooms in each flat; building adapted to narrow lot. Ornamental, Romanesque Front. Cost, $10,000.

No. 19. **Queen Anne Cottage, Eight Rooms.** Good light; exhibiting good effect. Cost, $4,000.

No. 21. **Maplewood Cottage, Three Rooms.** Abundance of piazza. Very neat and convenient. Cost, $1,000.

No. 22. **Hyacinthe Cottage, Three Rooms.** Very odd and pleasing. Cost, $750.

No. 23. **Clovernook Cottage.** New in style. Cost, $750.

No. 25. **Eastlake Cottage, 8 Rooms.** Neat and cosy Frame. Cost, $1,875.

No. 26. **Castle Stone Cottage, Six Rooms.** This design is handsome. Cost, $2,575.

No. 38. **Cheap City House, Eight Rooms.** Suited for inside lot; nicely laid out. Cost, $2,600.

No. 40. **Charming Suburban Cottage of Five Rooms.** Very roomy and convenient. Cost, $2,500.

No. 42. **Beautiful 6-Room Cottage.** Handsomely designed; all modern improvements. Cost, $3,100.

No. 49. **Neat Village Church.** Seating capacity about 600. Cost, $7 500.

No. 50. **Store and Office Building.** Brick; 2 stores and 8 offices, very handsome. Cost, $7,000.

No. 51. **Modern Suburban Residence of Nine Rooms.** Beautiful design. Cost, $2,100.

No. 57. **Rosedale Cottage, 3 Rooms.** With Bay Window, Frame. Cost, $1,000.

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,

HOWARD STREET, BOSTON, MASS.

OUR GREAT OFFER

TO SUBSCRIBERS

TO THE

AMERICAN ANALYST.

We will send the **ENTIRE SET OF DICKENS' WORKS,** *in* **TWELVE VOLUMES,** *as here described, all postage prepaid by ourselves, also* **THE AMERICAN ANALYST** *for* **ONE YEAR,** *upon receipt of* **$1.50,** *which is only* **50** *cents more than the regular subscription price of this paper.* Our readers, therefore, practically get a set of Dickens' works in twelve volumes for only **50** cents. This is the grandest premium ever offered. Up to this time a set of Dickens' works has usually been $10.00 or more. Tell all your friends that they can get a set of Dickens' works in twelve volumes, with a year's subscription to **THE AMERICAN ANALYST** for only **$1.50.** Subscribe now and get this great premium. If your subscription has not yet expired, it will make no difference, for it will be extended one year from date of expiration. We will also give a set of Dickens', as above, free and post-paid, to any one sending us a club of three yearly subscribers.

ADDRESS:

THE ANALYST PUBLISHING CO.

No. 19 PARK PLACE,

NEW YORK.

TABASCO PEPPER SAUCE,

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced by connoisseurs to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY'S SON,

NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

NATRONA BI-CARBONATE OF SODA.

ABSOLUTELY PURE.)

The nature of the raw material from which NATRONA BI-CARBONATE OF SODA is made—viz., kryolith, a mineral containing *pure sodium*—insures a purity and uniformity of product which cannot be obtained from any other known material. In making BI-CARB. SODA from any other raw material, the use of sulphuric acid is a necessity, but none is used in any part of the process of making NATRONA BI-CARB.; hence its entire freedom from the slightest trace of arsenic, which is always present in ordinary soda. Its absolute purity and entire freedom from all traces of *sulphate of soda*, common salt and other impurities, render NATRONA BI-CARB. NEARLY TASTELESS, and being bolted through the finest bolting-cloth, insures the finest stage of division.

To these indisputable facts the attention of CONSUMERS of soda is specially called. They are IMPORTANT, and should influence both those who use and those who sell soda, to buy and sell NONE BUT THE BEST.

The NATRONA BI-CARB. Soda is kept in stock by almost every wholesale druggist and grocer throughout the United States, of whom it may be ordered.

Natrona Bi-Carb. Soda is unequaled by any other brand of English or American Manufacture.

PENNA. SALT MANUFACTURING CO.,

NATRONA CHEMICAL WORKS. PHILADELPHIA, PA.

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

To Subscribers, Readers and Advertisers.

SUBSCRIBERS' attention is called to the great variety of interesting and instructive subjects treated in this number. We respectfully ask the co-operation of our subscribers in extending our Subscription list, which will enable us still further to increase the value of the AMERICAN ANALYST to them.

The CASUAL READER is specially requested to examine our liberal premium offer.

ADVERTISERS who do not know of this Journal already, are respectfully referred to article headed "A Business Benefit."

ALL are kindly requested to peruse this number thoroughly.

The AMERICAN ANALYST can be had at any news stand in the United States. Any newsdealer will take orders for it, the American News Company being our wholesale agents. All postmasters will receive subscriptions.



RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,
184 Greenwich St., N.Y.

INSTRUCTIONS TO SUBSCRIBERS.

The Names of all Subscribers are registered as soon as received, and paper is always promptly forwarded.

Postage.—The postage to all parts of the United States and Canada is paid by the publisher.

Remittances of small sums may be made with comparative safety in ordinary letters. Sums of one dollar or more must be sent by registered letter or P. O. money order, otherwise we cannot be responsible for same. Silver must not be sent in a letter.

Postage Stamps will be received for the fractional part of a dollar, and in any amount when it is impossible for patrons to procure bills, but you must send one or two-cent stamps only.

SUBSCRIPTIONS.—The AMERICAN ANALYST will be sent one year to any subscriber for ONE DOLLAR. New subscriptions can begin at any time.

We Stop the Paper at the expiration of the time paid for unless a renewal of subscription is received. Those whose subscriptions have expired must not expect to continue to receive the paper unless they send the money to pay for it.

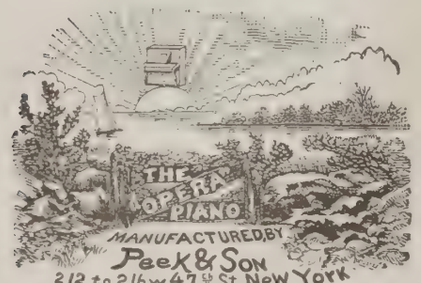
Change of Address.—Subscribers wishing their addresses changed must invariably give their former as well as new address.

Missing Numbers.—It occasionally happens that numbers of our paper sent to subscribers are lost or stolen in the mails. In case you do not receive any number when due, write us a postal card and we will cheerfully forward a duplicate of the missing number.

Most Important of All.—In every letter that you write us, never fail to give your full address, plainly written—name, post-office, County and State.

Address all letters to

THE ANALYST PUBLISHING CO.,
19 Park Place, New York.



A HIGH-GRADE PIANO
AT A VERY MODERATE PRICE.
NEW DESIGNS. FANCY WOODS.
Terms Easy. + Monthly Instalments.
TWO, THREE AND FOUR PEDALS.
Catalogues, Prices, Terms, Etc., sent to any address.
EVERY PIANO WARRANTED 5 YEARS.
(Mention this Paper.)

THE LABORATORY.

To Inventors, Manufacturers and Applicants for Patents

The AMERICAN ANALYST may be consulted upon all matters involving theoretical or applied chemistry. Advice and opinions given. Analyses and assays made. Patents perfected and secured. Terms reasonable.

Address, AMERICAN ANALYST,
19 Park Place, N. Y.

SWIFT'S
CHOICE
Chicago Dressed Beef
AND
MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,
UNION STOCK YARDS,
CHICAGO, ILLS.

THE ORIGINAL AND GENUINE
(WORCESTERSHIRE SAUCE).



LEA & PERRINS' SAUCE

In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—

Lea & Perrins

Beware of Imitations; see that you get Lea & Perrins'

For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS, NEW YORK.

GLENN'S
SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,

C. N. CRITTENTON,
115 FULTON STREET,
NEW YORK.

Be progressive and keep abreast of the times. Avoid dyspepsia by using **Lard Compound** and **Cottolene,** a substitute for lard.

The highest medical authorities pronounce them healthful; and expert cooks commend them.

Our **Clairette** brand of cotton oil soap is the purest and best laundry soap in the market; as pleasant to the hands as genuine castile.

N. K. FAIRBANK & CO.,
CHICAGO AND ST. LOUIS.

The Standard of Excellence.
KINGSFORD'S
OSWEGO
Pure and Silver Gloss



STARCH
KINGSFORD'S
OSWEGO CORN STARCH
FOR
Puddings, Custards, Blanc-Mange, Etc.
THE PERFECTION OF QUALITY.
WILL PLEASE YOU EVERY TIME.
Always ask your Grocer for these goods.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 32. NEW YORK, THURSDAY, AUGUST 6, 1891. WHOLE No. 232

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - - $1 per year.
Single Copies, - - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.
Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.
Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,

H. LASSING, M. D.,
T. P. McELRATH, } *Editors.*

No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

Alchemy 378
An American Duchess 376
Domestic Dietetics 377
Eclipses in History 375
Editorials 373
The Incandescent Lamp Decision; Women in 1893; The Comet Finder.
Electricity, What is? 374
Florida Phosphates 374
Mind Reading 376
Pie, A Champion for 377
Tea, Ideal 378

THE INCANDESCENT LAMP DECISION.

About a fortnight ago Mr. Edison gained what appeared to be a conclusive decision in his favor, in the shape of an injunction prohibiting other electrical companies from making and selling incandescent lamps, the United States courts having recognized him as the inventor and patentee of these instruments. On July 22, however, in the United States Circuit Court, Justice Wallace, in chambers, granted a six months' stay of the injunction pending an appeal by the defendants in the case, who meanwhile are placed under bonds to the amount of $50,000. In moving for the stay several affidavits were presented, replete with instructive historical facts relating to this peculiar branch of the lamp industry, but want of space prevents our placing them before the readers of the AMERICAN ANALYST. An interesting synopsis of them is given in the *Electrical Review*, which journal also discusses them briefly in its editorial columns as follows: "Judge Wallace has ordered a suspension of the injunction in the lamp case pending an appeal. This will leave the commercial features of the lamp industry substantially in *statu quo*. The value of the decision in favor of the plaintiff will be the influence it may exert on the Appellate Court. The reasons influencing the order were the delay the plaintiff had made in bringing its suit and the doubtful character of the patent on its face, which invited competition and led to the investment of a great amount of capital. If the injunction were permitted to go into immediate effect, the public would be affected by the necessary interruption of many existing lighting plants, and a great number of men would be thrown out of employment. He thought the suspension of the injunction for six months was not unreasonable, in view of a delay of five years in bringing suit. The operation of this order will be of great present value to the defendant company. Much might be said for or against the order. The court having once declared the patent sound and that infringement existed, it would seem that the consequences of the infringement should be borne irrespective of any embarrassment that might ensue. On the other hand, where a clouded title led people, who acted under the best light they could get on the patent, to invest large amounts of capital, and where they were permitted to build up a large business for five years before being called to task, strong grounds for indulgent treatment exist. Judge Wallace's remarks that there is a 'fair doubt' whether his decision will be sustained will tend to mask the effect it would have in the construction of the Appellate Court, and adds another element of doubt to the ultimate issue. The order for the stay suspends the operation of the injunction so far as regards the manufacture and sale of lamps by the United States Company to be used in connection with the dynamo machines, including those already sold and those which may be sold in the future."

WOMEN IN 1893.

The fair sex is to be well represented in the official councils of the Columbian Exposition, at Chicago, in 1893. Illinois has not only given women a representation of eight members upon the State Commission, but has a special appropriation of $80,000 for their separate use—placing ten per cent. of the State appropriation at their absolute disposal. The Illinois State Board convenes this month, and the women's work will at once begin. No other State has made a special appropriation for this purpose, but Indiana has been in all other respects as generous in official recognition of women as Illinois. Colorado comes close after and has also given women a place on her State board. In addition these lady Commissioners are permitted the privilege of putting two additional women in the field to canvass the State in the interest of the Board, and a third to collect the native flora. Massachusetts has appointed three women upon a State Commission of five. Rhode Island has four women in a State Commission of sixteen members, and a lady has been elected Treasurer and Secretary. It may be mentioned that a woman is now searching the Patent Office at Washington for records and models of women's inventions from the earliest history of America. Pennsylvania has recognized the lady managers as State officers upon its Commission. The silk producing industry will undoubtedly make a fine showing through the Woman's Board, as the lady manager for Pennsylvania has been for years the President of the largest silk growing association in the United States. Many women in Georgia and California are also engaged in the silk industry. In the State of Washington the lady managers are ex-officio members of the State Board. In every instance, excepting the three special appointments in Colorado, the lady Commissioners receive no salaries, only their expenses when engaged in the actual service of the Commission being paid by the State. It is also announced that Mexican women will receive official recognition from Mexico's World's Fair Commission; this, in view of that country's extreme conservatism and of the almost Oriental limitations of the privileges of its women, is something quite remarkable and unexpected.

THE COMET FINDER.

The *Science News* characterizes as one of the most ingenious scientific hoaxes ever perpetrated, the description of an alleged automatic "comet finder" attributed to the inventive genius of Professor Barnard of the Lick Observatory, the action of which was said to be dependent upon the varying electric resistance of the element selenium under the action of light. Originally appearing last Spring in a San Francisco daily newspaper, it was written with such skill, and with all the details of the apparatus described in such a plausible manner by one evidently thoroughly familiar with the principles of physics and astronomy, that it was particularly well calculated to deceive—as, in fact, it did—nearly every scientific periodical in the country, although a close examination of the article would have shown at once the absurdity of the story. A letter from Professor Barnard, exposing the hoax, states that he considers it one of the most remarkable ever gotten up on an astronomical subject, and that it was originated by a young man of remarkable ability—as, indeed, he must have been to have succeeded in deceiving so many persons familiar with such matters. Professor Barnard's "comet finder" will have to be classified hereafter with the "moon hoax" of some half a century ago, and other products of a too lively and indiscriminating scientific imagination.

WHAT IS ELECTRICITY?

A PROBLEM LIKELY SOME DAY TO BE SOLVED.

A highly interesting and instructive lecture on electricity was delivered May 20 before the American Institute of Electrical Engineers, at Columbia College, by Nikola Tesla. The entire discourse is published in the *Electrical Review* of July 11, oocupying more than seven pages of the valuable space of our enterprising contemporary, from which we condense the subjoined significant sentences: Nature has stored up in the universe infinite energy. The eternal recipient and transmitter of this infinite energy is the ether. The recognition of the existence of ether, and of the functions it performs, is one of the most important results of modern scientific research. The mere abandoning of the idea of action at a distance, the assumption of a medium pervading all space and connecting all gross matter, has freed the minds of thinkers of an ever-present doubt, and, by opening a new horizon—new and unforeseen possibilities—has given fresh interest to phenomena with which we were familiar of old. It has been a great step towards the understanding of the forces of nature and their manifold manifestations to our senses. It has been for the enlightened student of physics what the understanding of the mechanism of the fire-arm or of the steam engine was for the barbarian. Phenomena upon which we used to look as wonders baffling explanation we now see in a different light. The spark of an induction coil, the glow of an incandescent lamp, the manifestations of the mechanical forces of currents and magnets are no longer beyond our grasp. Instead of the incomprehensible, as before, their observation suggests now in our minds a simple mechanism, and although as to its precise nature all is still conjecture, yet we know that the truth cannot be much longer hidden, and instinctively we feel that the understanding is dawning upon us. We still admire these beautiful phenomena, these strange forces, but we are helpless no longer. We can in a certain measure explain them, account for them, and we are hopeful of finally succeeding in unravelling the mystery which surrounds them. Of all the forms of nature's immeasurable, all-pervading energy, which, ever and ever changing and moving, like a soul animates the inert universe, those of electricity and magnetism are perhaps the most fascinating. The effects of gravitation, of heat and light we observe daily, and soon we get accustomed to them, and soon they lose for us the character of the marvelous and wonderful: but electricity and magnetism, with their singular relationship, with their seemingly dual character, unique among the forces in nature, with their phenomena of attractions, repulsions, and rotations, strange manifestations of mysterious agents, stimulate and excite the mind to thought and research. What is electricity, and what is magnetism? These questions have been asked again and again. The most able intellects have ceaselessly wrestled with the problem; still the question has not as yet been fully answered. But, while we cannot even to-day state what these singular forces are, yet we have made good headway towards the solution of the problem. We are now confident that electric and magnetic phenomena are attributable to ether; and we are, perhaps, justified in saying that the effects of static electricity are the effects of ether under strain, and those of dynamic electricity and electro-magnetism effects of ether in motion. But this still leaves the question, as to what electricity and magnetism are, unanswered. First, we naturally inquire, What is electricity, and is there such a thing as electricity? In interpreting electric phenomena, we may speak of electricity or of an electric condition, state or effect. If we speak of electric effects we must distinguish two such effects opposite in character, and neutralizing each other, as observation shows that two such opposite effects exist. This is unavoidable, for in a medium of the properties of ether, we cannot possibly exert a strain, or produce a displacement or motion of any kind, without causing in the surrounding medium an equivalent and opposite effect. But if we speak of electricity, meaning a thing, we must, I think, abandon the idea of two electricities, as the existence of two such things is highly improbable. For how can we imagine that there should be two things, equivalent in amount, alike in their properties, but of opposite character, both clinging to matter, both attracting and completely neutralizing each other? Such an assumption, though suggested by many phenomena, though most convenient for explaining them, has little to commend it. If there is such a thing of electricity, there can be only one such thing, and, excess and want of that one thing, possibly, but more probably its condition, determines the positive and negative character. The old theory of Franklin, though falling short in some respects, is, from a certain point of view, after all, the most plausible one. Still, in spite of this, the theory of the two electricities is generally accepted, as it apparently explains electric phenomena in a most satisfactory manner. But a theory which explains better the facts is not necessarily true. Ingenions minds will invent theories to suit observation, and almost every independent thinker has his own views on the subject. What, of all things, the existence of which we know, have we the best reason to call electricity? We know that it acts like an incompressible fluid; that there must be a constant quantity of it in nature; that it can be neither produced nor destroyed; and what is more important, the electro-magnetic theory of light and all facts observed teach us that electric and ether phenomena are identical. The idea at once suggests itself, therefore, that electricity might be called ether. Nothing would seem to stand in the way of calling electricity ether associated with matter—bound ether; or, in other words, that the so-called static charge of the molecule is ether associated, in some way with the molecule. Looking at it in that light, we would be justified in saying that electricity is concerned in all the molecular action. Now, precisely what the ether surrounding the molecules is, wherein it differs from ether in general, can only be conjectured. It cannot differ in density, ether being incompressible; it must, therefore, be under some strain or in motion, and the latter is the more probable. To understand its functions it would be necessary to have exact idea of the physical construction of matter. But of all the views of nature the one which assumes one matter and one force, and a perfect uniformity throughout, is the most scientific and likely to be true. An infinitesimal world, with the molecules and their atoms spinning and moving in orbits in much the same manner as celestial bodies, carrying with them ether, which is probably spinning with them—in other words, carrying with them static charges—seems to my mind the most probable view; one which in a plausible manner accounts for most of the phenomena observed. The spinning of the molecules and their ether sets up ether tensions or electrostatic strains; the equalization of ether tensions sets up ether motions or electric currents, and the orbital movements produce the effects of electro and permanent magnetism. About fifteen years ago Professor Rowland demonstrated a most interesting and important fact, namely, that a static charge carried around produces the effects of an electric current. We can conceive lines or tubes of force which physically exist being formed of rows of directed moving molecules; we can see that these lines must be closed; that they must tend to shorten and expand, etc. It likewise explains in a reasonable way the most puzzling phenomenon of all, permanent magnetism, and, in general, has all the beauties of the Ampere theory without possessing the vital defect of the same, namely, the assumption of molecular currents. Without enlarging further upon the subject I would say that I look upon all electrostatic current and magnetic phenomena as being due to electrostatic molecular forces. The possibilities which are opened by modern research are so vast that even the most reserved must feel sanguine of the future. Eminent scientists consider the problem of utilizing one kind of radiation without the others as a rational one. In an apparatus designed for the production of light by conversion from any form of energy into that of light such a result can never be reached, for no matter what the process of producing the required vibrations, be it electrical, chemical or any other, it will not be possible to obtain the higher light vibrations without going through the lower heat vibrations. It is the problem of imparting to a body a certain velocity without passing through all lower velocities. But there is a possibility of obtaining energy, not only in the form of light, but motive power and energy of any other form, in some more direct way from the medium. The time will be when this will be accomplished, and the time has come when one may utter such words before an enlightened audience without being considered visionary. We are whirling through the endless space with an inconceivable speed, all around us everything is spinning, everything is moving, everywhere is energy. There must be some way of availing ourselves of this energy more directly. Then, with the light obtained from the medium, with the power derived from it, with every form of energy obtained without effort, from the store forever inexhaustible, humanity will advance with giant strides. The mere contemplation of these magnificent possibilities expands our minds, strengthens our hopes, and fills our hearts with supreme delight.

FLORIDA PHOSPHATES.

EXTENSIVE DEPOSITS OF VALUABLE FERTILIZERS IN FLORIDA.

An expedition of the Geological Survey has just returned from Florida, whither it was sent to investigate the newly discovered phosphate beds in that State which are undoubtedly the most wonderful deposits of their kind in the world. For a period covering so so many millions of years that no one would ever think of trying to reckon the time, these beds were being formed under the sea by billions of generations of mollusks and other shellfish, big and little, which died and added their limy remains to the steadily increasing deposits. Thus, when the ocean retreated, banks of lime appeared, innumerable sea fowl occupied them for roosting purposes, and their manure infiltrated the shelly substance, This manure contained in large quantities phosphoric acid, which took the place of carbonic acid in the lime and transformed it into a phosphate of that substance, as the chemists call it. Now, it happens that phosphoric acid is one of the elements most essential to vegetable reproduction, because it enters so largely into the composition of plants. Seeds are more than half made of it. A cow at pasture for one summer will take away from the land fifty pounds of this material in the shape of veal and milk. Therefore the soil must be continually resupplied with it, and hence the great value of the phosphate of lime derived from fossil deposits. Although the Florida beds were only discovered two years ago, the expedition reports that a large part of the State is already transformed into a veritable mining camp. For two hundred miles through the north and northwest counties quarrying for the substance is, going on, mines are being opened, and the product is being prepared for shipnment. Real estate and other sharks are active, and fortunes are being made and lost; but there seems to be no doubt of the fact that the finding of this new wealth is a great thing for the flowery peninsula. In the region referred to it is the rock phosphate that is found—the solid substance—in a layer that is as much as fifty feet thick in places covered over with the sand which form the surface soil to the depth of from two to twenty feet. Of course

people in Florida have known of the existence of this curious limy deposit for ever so long. Over a great part of the State they could not dig very far without coming upon it. But it is only a little while ago that some person gifted with the sublime curiosity that approaches genius thought of having the stuff analyzed. Then it was that numerous "cracker" residents learned how they had been living on top of what might as well have been a gold mine, while dining upon the hog and hominy of ignorant privation. The method adopted in working these deposits is, first, to sound the ground by driving into it at intervals of a few feet a long iron rod with a sharpened point. When the phosphate bed is reached, the rod is withdrawn and a stake is stuck in its place with figures on it indicating the number of feet of depth at which the strike has been made. In this way a district of more or less extent is "rodded," and operations are begun by clearing away the surface soil in the most promising spots and quarrying out the material. The process is like any other open quarrying, the blast being supplemented by the pickax and the shovels. Before the substance is ready for shipping, it is dried in kilns in order to free it from all moisture, after which it is put on cars and forwarded by rail to Fernandina, Tampa, Punta Gorda, and some to Alanta, Ga. At these points it is loaded aboard vessels bound for Europe or for New York, Baltimore, or other American ports. England is a large buyer of phosphate. After arriving at its destination, say Baltimore, the material is ground into a fine dust and treated with sulphuric acid, so that it is transformed into a powder which would be termed by a chemist an "acid phosphate." This powder is then mixed with other ingredients so as to compose fertilizing preparations for various purposes. The fruit grower wants one mixture, the vegetable farmer another, and so on. However, the ingredients mentioned are either nitrates, the nature of which will be presently described, or refuse from packing works, in the shape of bones, horns, blood, and all manner of corruption, reduced by desiccating processes to pulverized inoffensiveness. Elsewhere in Florida great beds are found of phosphates in a different condition. In the middle of the State, over an area covering hundreds of square miles, the soil is underlaid by a stratum as much as fifteen feet thick in some places of the same material in the shape of pebbles densely strewn in a whitish clayey matrix. Buried in this layer are discovered great masses of the remains of huge animals extinct for ages, particularly sharks, which were doubtless seventy or eighty feet in length. One gets some notion of the swarm of these ferocious giants of the deep that existed in that antediluvian age from the finding of their great teeth, each longer than a man's hand, in the phosphate, as thickly distributed as plums in a puddling. In the same deposits are found countless bones of the mastodon, the megatherium, the elephant, the hog, the horse, the muskrat, etc. They are immense graveyards of ages long gone by, preserving for the contemplation of man the remains of the mighty beasts and fishes. These phosphate "land pebbles," as they are called, are supposed to have been originally derived from the rock deposits, being fragments washed to their present shape by water; but no one knows positively. The nitrates, of which mention has been made, are obtained largely from Chili, where the supply is practically controlled by Col. North, the "Nitrate King," who is such a great friend of the Prince of Wales. They are simply deposits of nitrate of soda in the beds of lakes long ago dried up, which originally contained in solution large quantities of that material. At present it is simply necessary to dig it up, put it through suitable processes, and ship it at so much a ton, for fertilizing purposes. When a lake receives the flow of a great watershed and has no outlet, except by evaporation, its water naturally accumulates and precipitates on the bottom the chemical elements filtered into it from the soil around about. Hence the nitrate deposits referred to. Bird manure, as has been said, contains a great percentage of phosphoric acid, and hence its wonderful value as a fertilizer. So well was this appreciated centuries ago that the Incas of ancient Peru declared death as the punishment for any one who killed even one of the birds which deposited guano on the islands off their coasts. Of late years many of these guano islands have been stripped of their precious material, and before long none of it will be left, although in places it was an hundred feet in depth, being composed of droppings of flamingoes, divers, penguins, and other sea fowl during countless generations, together with their carcasses, and the excrement of seals, sea lions, and marine animals of various sorts innumerable. Many considerable deposits of bat guano have been found in caves in various parts of the United States, made up of the dropping and bones of these animals, and from such beds fertilizing supplies have been drawn; not to mention the use made of them during the war as mines for the production of saltpetre, from which to manufacture gunpowder.

ECLIPSES IN HISTORY.

HOW DATES ARE DETERMINED BY AID OF THE SUN AND MOON.

Every reader of *Vom Fels zum Meer*, says Prof. Schubert in that journal, must be familiar with the important role played by the moon in the fixing and determining of dates, among the people of earlier civilization; the regularity of its rotation, and the consequent possibility, by calculating backward, of determining the dates of new or full moon at any period, however remote, being important aids in determining the precise date at which given historical events occurred. But the chronological value of the moon rests not merely on the unbroken regularity of its tireless course and change of phases; the periodically recurring eclipses of the sun and moon being calculated backward, events of ancient history can have their correct dates assigned to them with absolute exactitude. It occurs on an average once to twice a year that the full moon wholly or partially enters the pointed conical shadow which the sun continually projects from the earth on the side furthest from it, a hundred thousand miles into space. At such times we see the shadow of the earth thrown upon the moon's disc, which is then wholly or partially eclipsed. This phenomenon is visible simultaneously from all parts of the earth where the moon is above the horizon. A still more remarkable phenomenon is the eclipse of the sun. This occurs at new moon, when the point of the shadow which the sun projects from the moon is thrown upon the earth. This shadow is also a pointed cone projecting into space from the side of the moon furthest from the sun. But since the moon is smaller than the earth, it is impossible that it can envelope it wholly in its shadow. In fact, the point of the shadow covers only a narrow region of the earth, from which region alone the sun is wholly eclipsed. In the immediately surrounding region the sun is only partially eclipsed, and in more remote regions not at all. Total eclipses of the sun occur on an average about three times in four years, but a total eclipse for any given region of the earth does not occur oftener than once in two hundred years. It is, hence, possible, when an eclipse of the sun is described as occurring in connection with some remote historical event, and the hour of the eclipse is mentioned, as is sometimes done, to fix the period of the occurrence with exactitude and thereby materially facilitate historical research. The first to concern himself with the backward calculation of eclipses as an aid to chronology was the French astronomer, Pingre, who, at the close of the last century, calculated the dates of the eclipses which had occurred, or would occur, in civilized regions from 1000 B. C. to 2000 A. D. A work of this magnitude proved too much for one man, and the calculations were generally faulty. To remedy this and provide reliable data for historical research, the work was again taken in hand by the Viennese Astronomer Royal, Professor von Oppolzer, whose work, "Kanon der Finsternisse" (Laws of Eclipses), was published in 1887. Oppolzer himself worked out the plan and calculations and detail, and was assisted in his labors by ten astronomers, whom he paid from his own purse. This work, which fixed the date of 8,000 eclipses of the sun and 5,200 eclipses of the moon, extending over a period from 1207 B. C. to 2163 A. D., filled 242 thick folio volumes with its calculations. The published "Kanon" gives the results only on 376 pages of large quarto, to which are added 160 maps of the world, on which are indicated the zones of visibility of all the total eclipses, so that a mere glance at the map is sufficient to determine the date of any given total eclipse. It may be asked here: how was it possible to foretell eclipses in the old days before astronomy was reduced to science? This is explained by the fact that even in the earliest ages the dates of eclipses, whole or partial, were recorded, and evidence thus secured that after every 223 revolutions of the moon, that is, after every 19,756 days eclipses recur in the same order. These eclipse periods were called "Saros" by the Greeks who undoubtedly got them from the Chaldeans. There are grounds, however, for concluding that this period was known to the Chinese 3,000 years before the birth of Christ, and that the ancient Hindoos foretold eclipses by the same calculation. This method is not, however, absolutely trustworthy, furnishes no precise details, and in forecasting eclipses of the sun, leaves unanswered the important question whether the eclipse will be total or partial, or in what precise region it will be visible. But, since we have not only in Greek and Roman writings, but also in Chinese, Indian, and Arabian writings, records of a number of eclipses with their attending circumstances, it is often easy to identify one of them with one indicated in the "Kanon." In illustration of the influence upon historical data of this ability to calculate past eclipses, it will suffice to point to two famous examples: The first, that of the oldest recorded eclipse, which occurred in China 4,000 years ago; the second that of the eclipse in Jerusalem during the Crucifixion. We have an account of the first in the Chinese book "Schuking," according to which an eclipse took place in the early morning in the last month of harvest in the fifth year of the reign of the Emperor Tschung-hang. From other sources we learn that the Emperor Tschung-hang undoubtedly reigned in the twenty-second century, B. C. And Oppolzer determined that the only eclipse of the century which would apply, took place on the 22d October, 2137 B. C. With regard to the second example, Eusebuis says that Christ suffered in the nineteenth year of Tiberias, and we learn from Greek records that in this year the sun was darkened, Bithynia shaken, and the greater part of Nicea laid in ruins. Phlegon narrates that a total eclipse of the sun, which lasted from the sixth to the ninth hour occurred in the reign of Tiberias "during full moon." Paulus Diaconus says the same, and adds that neither the moon nor the clouds intervened to produce it, and that it occurred on the 14th day of the month. Now an eclipse of the sun at full moon is an impossibility. Nevertheless, on reference to the "Kanon" we find, that a total eclipse of the sun, and the only one that occurred in that region between eight years before our reckoning and 59 A. D., took place on Thursday, the 24th November, 29 A. D. This is not reconcilable with the scriptural account of the Crucifixion which places it at the time of the Jewish Easter. On reference to the "Kanon" we find, however, that on Friday, the 3d April, 33 A. D., there was an eclipse of the moon, visible at Jerusalem. There is, hence, little room for doubt that the historians confused the two events and that the eclipse of the moon was the phenomenon which signalized the Crucifixion.

AN AMERICAN DUCHESS.

THE LONDON HOME OF THE DUCHESS OF MARLBUROUGH.

No. 3 Carlton House Terrace, lately bought by the Duchess of Marlborough, was for many years the residence of the late Lady Brownlow, whose hospitality therein dispensed is still most pleasantly remembered. It is one of the largest of the spacious mansions that form the terrace, and impresses one the moment the entrance doors are passed with a sense of quiet repose and dignity. The wide vestibule and hall are softly carpeted and warmly colored, not a footstep breaks the silence, not an inharmonious note jars upon the nerves. Against the dull crimson walls a collection of arms and weapons is artistically arranged in a trophy *motif;* the wide staircase ascends at the back, and is broken half way by a broad landing. In Lady Brownlow's time the second short flight of stairs gave immediate access to the morning room, but the Duchess of Marlborough has altered this inconvenient arrangement by making the old boudoir into a large square ante-chamber, divided from the staircase by six handsome columns of *verde antique* marble. Opening from this is the new room built by the Duchess for her own special sanctum, to reach which you go down three or four steps, easily shut off when desirable by portieres and glass doors. Truly a gem of a room, replete with a thousand charming artistic and historic souvenirs and bearing the stamp of individuality bestowed by the constant presence of its mistress. The proportions are lofty and pleasing; the walls are hung in brocade of a soft, brilliant, yet pale green shade, supported by a low dado of white enameled wood. One broad window opening to the floor is draped in a similar texture, and gives access to a miniature conservatory, all lined with palms and tropical ferns and made gay and lovely with the choicest flowers, orchids especially, these being the Duchess of Marlborough's favorite exotic, and any one familiar with the beauty and rarity of the Blenheim orchids will at once realize the gorgeous effect of color and form thus attained. Birds have their homes here, too, singing in their cages merrily enough, and lesser flowers bloom on all sides. "Oh, indeed, yes!" her Grace says with a bright smile, "I do love this little room; it is my very own, you see, and here I am never disturbed. My flowers and my birds make it very bright and homelike, and it is not too large to be thoroughly comfortable and cosey." The decorations of this little salon are Louis XVI. in style, the marble chimney-piece being a particularly fine example of French workmanship of that period, though showing strong evidences of the influence of the English brothers Adams in the design and execution. The centre jamb has an interest of its own, as it was taken from one of the original mantel-pieces at Blenheim Palace; the pure, severe lines of the bold half-relief sculptured figures are neither concealed nor half hidden by draperies, an innovotion too often adopted without satisfactory results. Above the narrow shell hangs an antique mirror framed in ornate gilt moulding, and above this again a most beautiful portrait, painted by Sir Joshua Reynolds, of one of the Churchill ancestresses. The wide hearth is tiled in marble, and on the low fire-dogs burns that most cheery of all fires, old, well-seasoned oak logs. On the walls hang a few rare and valuable pictures; one of a little maiden, by Sir Joshua, in a quaint green frock and a high conical head dress; near to this is a beautiful landscape, and beneath it a group of three water-color drawings are full of pathetic interest, not only on account of their intrinsic merit, but because they once belonged to the Empress Eugenie, and were special favorites of hers in the happier days of her checkered career. Two beautiful examples of old faience hang above a low *chaise-tongue;* both are relics from the famous Sellier sale. A tiny, slim-legged marqueterie table stands before the fire, holding a pretty collection of silver toys, and at right angles with the smaller window is placed a commodious and delightful escritoire, furnished with every luxury and convenience, including a telephone and electric bell, that the heart of the most *exigeant* scribbler could desire. With a sigh of regret you leave this delightful boudoir, and passing through the glass doors and up the short flight of steps enter the drawing-rooms on the left. These open one from the other, and form a stately suite when all *en grande tenue.* The spaciousness of the proportions is what most strikes you, and the loftiness of the ceilings, finished in half-cove, ornamented in gold on a cream-white ground. The design is very elaborate, being a replica of one of the ceilings at Versailles of Louis XVI. period. The walls are hung in rich satin damask of that rare and very beautiful shade known as *bouton d'or*—that subtle gleaming tint which catches a thousand golden lights and reflections as the sun strikes across it. Upon this exquisite background, filling all the larger spaces, are very choice old Flemish tapestries, supplemented here and there by some artistic gem in bronze or some veritable "old master," sent from the Blenheim gallery. A fine bust in green bronze, standing in one corner on a slender marble pedestal, at once arrests the eye, not only as a superior work of art, but also as a speaking, life-like presentment of *Le Grand Monarque*—Louis XIV. A large mirror of old French workmanship hangs above the narrow marble mantelshelf, in itself an exceptional specimen of eighteenth century stone carving; and on either side are candelabra groups, veiled in soft-hued silks, that diffuse the cool white rays of the electric light. The furniture is ornate and florid, the elaborate gilt mounts setting off effectively the dainty brocades, flowered silks, and delicate satins of varying hues, which seem almost too fairy-like for daily use. Here, too, on every side flowers hold undisputed sway, adorning quaint console tables and graceful ormulu cabinets, growing in pots or thrown carelessly into antique vases and great crystal bowls. The air is heavy with the sweet perfume, and on every hand the eye is gratified by their graceful forms and vivid coloring—for the Duchess of Marlborough has the inherited love of her nation for these children of nature. "I cannot live without flowers," says her Grace. "You know what a necessity they are to American women. We are accustomed to their influence from our childhood—just as we are accustomed to bright sunshine and blue skies. I am a true American in my love for them. Life without flowers would not be life to me—certainly not life worth living!" Opening from this stately yellow salon is the second drawing-room, with its three long windows looking out upon St. James' Park, a room full of the most delicious things, over which one would like to linger for hours. The walls and draperies are of a bright positive "flame color" damask, a brilliant, peculiar shade with a gleaming copper sheen upon its surface. The color and design are Blenheim heirlooms, and its resuscitation is due to the Duke of Marlborough having unexpectedly discovered a torn and tattered fragment of the original damask on an old chair, which so pleased his artistic taste that he immediately had the pattern and fabric copied and reproduced. The pictures that adorn this inner drawing-room are of themselves a liberal education, being for the most part original Rubenses, brought from the Blenheim collection. Truly a charming home, well worthy of the charming hostess who greets you with such unaffected courtesy and cordiality. The Duchess of Marlborough is a beautiful woman, tall and extremely graceful, with a touch of gold in the abundant brown hair that grows low upon the broad white forehead, expressive hazel eyes, and decidedly marked eyebrows. The charm of her face lies, however, in its ever changing expression, in the light that comes and goes in her eyes, in the smile that plays about her mobile lips, and that reminds you irresistibly of Cabanel's immortal "Marguerite," and as a natural sequence of Mme. Christine Nilsson, who inspired the French painter with his ideal of Goethe's unfortunate heroine. It is now nearly three years since Mrs. Louis Hammersley, of New York, became the Duchess of Marlborough, and came to England to make her home at Blenheim, and to restore that historic palace to something of its former beauty and grandeur. She has the peculiar charm of manner, voice, and inflection that render her so unlike other people, and so especially different from what we have wrongly come to accept as the "typical American woman." In conversation her Grace is amusing and brilliant, an accomplished linguist, and an appreciative if somewhat desultory, reader. Her views on all social topics are well thought out and well expressed, and her digest and exposition of the peculiarities and differences existing between the national characteristics of Englishmen and Americans is at once witty, shrewd and original. She is also an enthusiastic lover of art, and a connoisseur and critic of more than ordinary ability and acumen. Blenheim is, par excellence, the home of her choice and selection, and on the rehabilition of that historic spot she has lavished her wealth unsparingly." *The London Queen.*

MIND READING.

A KENTUCKY YOUTH WITH A WONDERFUL GIFT.

A new mind reader has been discovered at Glasgow, Ky., or rather discovered himself accidentally, not long since. He is Flavius Taylor, the son of Dr. F. J. Taylor, a Glasgow physician. His age is 19 years, and some account of his doings has been sent to the *Courier-Journal* by Dr. P. C Sutphin, another of Glasgow's physicians, who is familiar with the young man's case, and has made a study of mind reading, as well as what is termed "muscle reading" by performers who claim to be guided by the thrills of the muscles of the subject. Dr. Sutphin gives some speculations at length on the alleged distinction between mind reading and muscle reading, and arrives at the conclusion that, though there may be trickery and imposture used by some people there is such a thing as mind reading, and no such thing as muscle reading. He quotes from Stuart Cumberland, an English mind reader, who claimed that he was guided by the muscles, and in a performance before the Khedive of Egypt, wrote a word thought of (the name of the Khedive's son, Abbas) on a piece of paper, in Arabic, a language of which he knew nothing, and this without a moment's hesitation. Cumberland said this was muscle reading, but Dr. Sutphin details a similar test with young Taylor, which, he claims, shows the mind must bear its part in such a test as well as the muscles. He is willing to say that some things may be done by muscle reading, but that others cannot. Dr. Sutphin, in his account of young Taylor's performance, says: "We may concede, however, all that Mr. Cumberland says of muscle reading; may agree that all his feats were performed by it; yet when it is attempted to include all mind reading in this, then it will be found that this cannot be done. There is much of mind reading, indeed, that could not be explained, nor, in fact, be accomplished, by muscle reading. This is fully proven by a lately developed mind reader here in the place in which I live—a young man, Flavius Taylor, 19 years of age, son of Dr. F. J. Taylor, a prominent physician and pension medical examiner. It is not improbable that in nearly every instance the gift of mind reading has been of accidental discovery on the part of the one possessing it, and thus it was accidentally made known to young Taylor. Several months ago an itinerant mind reader exhibited in this place and young Taylor attended his performance. Returning home, he playfully remarked to a young man who had accompanied him that he thought he would make a good mind reader, and that if the other would blindfold him and hide something he would find it for him. To have a little amusement, he was duly blindfolded and next told to find a book that had been hidden in an adjacent room. He now grasped the hand of the young man

who had hidden the book, but was utterly surprised to find that not only the book but also its place of concealment were impressed on his mind. He readily took the young man to the place where the book was and handed it to him. After this there were more or less frequent tests of his powers in finding things thus, while all hidden articles were always promptly located by him. Intermingled with these tests were others, such as willing him to do certain things. Say, for instance, that it was willed for him to take a particular flower of a number of flowers in a vase in the room, and to hand it to a certain young lady present; to remove the watch from the pocket of a certain gentleman and to put it into that of another certain gentleman; to go to a library and take out some particular volume in it, and turn to a certain page and paragraph or sentence in it, and so on of other requests of this sort. All these were readily and accurately done by him, down to the minutest particular of the wish. Mr. Cumberland, however, professes to have done things quite equal to this by muscle reading, being directed in them by the muscular tremors of the hand kept enclosed in his. In this way, he says, he only followed direction, and knew nothing really of the mind, and only did as tremors directed. He did, in other words, precisely what the hand he was holding would have done, directed by the individual. In this, of course, there was no mind reading, but a guidance only by muscle signalling. Suppose, however, it was required to take hold of the hand; and next tell any particular thought of the mind—not find anything or to do anything that the hand of the individual might do, but simply to take the hand and say, not act out, what the thought was—then this could only be gotten direct from the mind, and in no other way, as mere muscle reading in this case would simply be impossible. In this case it would be necessary to see thought itself, to tell what it was, which the thrill of the muscles would not admit of. And yet, young Taylor can do this. He has been mentally requested, for instance, to play a certain air on the organ, one of a number of others played by him, when catching hold of the hand to know what it was, he would go to the organ and play it, using both hands for the purpose. Had he been playing by direction only of the muscles of the hand, he could not have let go the hand and played with both hands. But he has done better even than this. Any figure, or any number of figures, being thought of, he has readily announced what it or they were, calling them out singly or in combination, if desired. For instance, suppose that the figures 5, 3 and 8 were separately thought of. Then these were promptly told out, one by one, and announced singly as thought of; or suppose, again, these were thought of as 538, then this number, or 538, would be told. Some time ago, knowing that he did not understand Latin, I improvised a short Latin sentence—'est mihi voluutas ut legis meam mentem'—and asked him to tell me what it was. This was made out slowly, but quite accurately, the words being spelled out letter by letter. It is proper to say, too, that these were called out at once, without going over the alphabet and getting at them in this way, one by one, on the order of table rapping.' Nothing was said, really, more than to call out the letters in their proper order. Without mentioning other feats of this young man the question next occurs: Upon what other ground can we explain this telling of figures and calling out Latin than upon the silent impress of mind upon mind? This is the explanation, in fact, that young Taylor gives of his 'mind reading,' as it is called; or that he only interprets every thing by impression. He knows nothing of muscle reading, feels nothing of the sort, sees nothing, hears nothing, is not aware even of any particular exaltation of the perception, but simply finds certain thoughts or wishes of another impressed on him. His great difficulty, he says, is to get a correct impression from some who either lack concentration of mind or allow the too frequent intrusion of other thoughts into it. For a good effect impressions must be forcible and sharp cut, and the mind must be kept steadily and as exclusively as possible on the subject. He thinks the hand acts only as a conductor of impression, and regards it indispensable for that purpose, as the current of impression is transmitted in this way, without which he could tell nothing. In conclusion, I may add that in his performance there is usually considerable disturbance of his physical being. His respiration often becomes slow and labored, pulse usually goes up from ten to twenty beats above normal to the minute, there is heavy sighing at times, and sometimes so much exhaustion as to necessitate temporary rest."

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

August.

GAME AND POULTRY.—Pigeon, chicken, duck, woodcock.

MEAT.—Beef, lamb, mutton, ham, kidneys, liver, sausage, veal, venison.

FRUITS.—Cherries, raspberries, huckleberries, melons, gooseberries, blackberries, peaches, pears, tamarinds, bananas, pineapple, grapes, plums.

FISH.—Anchovy, bass, bluefish, blackfish, cod, eels, crabs, clams, flounder, halibut, herring, lobster, mackerel, mussels, porgie, prawn, salmon, turtle, trout, sturgeon, whiting, weak-fish, rockfish.

VEGETABLES. — Beans, beets, cucumbers, cabbage, carrots, cauliflower, corn, egg-plant, lettuce, onions, parsley, parsnips, potatoes, squash, shallots, spinach, turnips, radish, rhubarb, tomatoes.

PRACTICAL RECIPES.

CALF'S LIVER —Slice a liver very thin; fry out a few slices of bacon in a pan, or instead put a little olive oil and a little sweet lard in a pan; chop up some parsley, mushrooms, and a piece of a small fresh onion, and cover the bottom of the pan with them; put in a layer of liver, sprinkle with salt and pepper and another layer of the chopped vegetables; add again a layer of liver, then some more of the chopped vegetables; lay on this the slices of tried out bacon or some fresh slices, cover closely and cook. When done take out the liver, skim off the grease, and add flour and hot water to make a good gravy.

TOASTED CHEESE.—Weigh your eggs and beat them up in a saucepan; add to them a piece of butter the sixth of their weight and a third of their weight in grated Gruyere cheese; add a little salt and cayenne pepper. Put the saucepan over a bright fire, and stir constantly for a few moments until it is melted. Have ready some slices of thin toast on a hot platter; pour the fondue over this and serve at once.

SOFT SHELL CLAMS ESCALLOPED. — Purchase a dozen large soft clams in the shell and three dozen opened clams. Ask the dealer to open the first dozen, care being taken not to injure the shells, which are to be used in cooking the clams. Clean the shells well and put two soft clams on each half shell; add to each a dash of white pepper and half a teaspoon of minced celery. Cut a slice of fat bacon into the smallest dice, add four of these to each shell, strew over the top a thin layer of cracker dust; place a pat of table butter on top and bake in the oven until brown. They are delightful when properly prepared.

STUFFED POTATOES.—Put some large fine potatoes in boiling water and cook for a quarter of an hour; take them out, let them cool a little, cut off one end and carefully dig out the centre; have ready a forcemeat made of chicken, beef or veal, very highly seasoned. Fill up the potatoes with this. Put on the end you cut off and tie it down carefully; lay the potatoes in a pan and bake in a hot oven.

ARTICHOKE SOUP.—Take two pounds artichoke and peel them; put them to boil in two cupfuls water and two cupfuls milk, seasoning to taste with salt. Put in a saucepan half a pound of rice, a small fresh onion cut in two, and a turnip quartered; pour in four cupfuls of milk and cook. When the artichokes and the rice are both done put them together and mash them through a sieve. Make a cup of cream very hot. Put the puree again in the saucepan, season to taste, add the cream. Serve with the soup snippets of fried bread.

HAM CAKES.—Chop very fine two cupfuls of left-over cold ham, add to this half a cup of fine dry bread crumbs and two well-beaten eggs; season with pepper and a few drops of onion juice; form into little cakes and fry in hot fat for breakfast.

RICE CUSTARD.—Make a custard with a pint of milk, two eggs, sugar, grated nutmeg and vanilla. Add to it, before pouring into the cups, half a pint of boiled rice; mix and keep surrounded with ice until wanted.

A PIE CHAMPION.

THE POLITICAL POSSIBILITIES OF PUMPKIN PIE.

The world, says the *Sun*, has a new Mrs. Ewing—not a writer of delightful story books for children and about children, as was the late Juliana Horatia Ewing, but a woman who knows how to cook and how to teach others to cook. She has been telling what she knows about cooking and illustrating it by practical examples before large audiences at the summer school at Chautauqua; and she has actually ventured to say a good word on behalf of pie! When a qualified cook declares that the most delicate desert can be prepared at a cost of only a cent and a half a plate (notwithstanding the McKinley tariff and the lack of reciprocity with Canada), and then proceeds to prove it by feeding her hearers with delicious dainties, what she says about pie is not to be sniffed at, especially when her words are of political as well as economical import; "The trouble nowadays is that we pass over the soup at dinner because it is slop. We cannot eat the meat and vegetables because they are imperfectly cooked, and we devour pastry only because of the flavor, hence a nation of dispeptics. Cook knowledge as well as book knowledge is needed in this broad land of ours, and the offer of a good rich piece of pumpkin pie to every individual in attendance would draw a bigger crowd together than any political or religious meeting ever held, so much do people yearn for good food." At last the sentiments of the American pie eater have found an able and fearless advocate and expounder. In no one attribute is the unity of the New England stock, which has overspread the land from Maine to California, more evident than in the fondness of its individual representatives for pie. Before the war, barbecues, at which whole oxen were roasted, were the great political feasts in the Middle and Southern States. For these, as we gather from the words which we have quoted, Mrs. Ewing would substitute pie suppers. To campaign committees she says, in effect: "Don't waste your money on powder, or fireworks, or banners, or bands. Spend it for pie! Where the good rich pumpkin pie is, there will the qualified electors be also; and having once attracted them by pie and pleased them, they will remain to hear politics."

GAS IN LONDON.—The use of gas is extending enormously for domestic purposes in heating and cooking, as well as lighting. Some 3,000 gas engines are said to be in use in London, and the number of gas stoves now in daily use in the metropolis is stated to be no less than 70,000.

IDEAL TEA.

HOW TEA IS CONVERTED INTO OLD MAIDS' BOOTS.

The following advice concerning the somewhat familiar institution of tea-drinking, emanates from the versatile pen of Dr. Edward Bedloe, of Philadelphia, the present United States Consul at Amoy, China. When I left Philadelphia, I thought I was a fair judge of tea. I had imbibed both it and the knowledge of it in large quantities from George C. Boldt, John Chamberlin and Delmonico. Now, after having visited Ceylon, Formosa and the Amoy district, I find that I knew nothing, and the three worthy gentlemen named knew even less. We Americans don't know the first principles of making tea. The delicate leaf should never touch metal. It should be kept in paper, wood, glass or porcelain. To make it, put a small quantity in a porcelain cup, fill the latter with boiling water, cover it with a porcelain saucer and let it stand three minutes. Then if you desire to be an epicure, drink only the upper layer of the golden liquid, throw the rest away, rinse the cup and begin drawing *de novo*. Don't use sugar any more than you would sweeten Chambertin or pour molasses into Mumms' Extra Dry. Don't use milk. It ruins the flavor of the tea and injures the stomach. The cloudiness produced by adding milk to tea arises from the action of the tannin upon the casein, and is, chemically speaking, pure leather. An old maid who drinks a dozen cups of this mixture a day swallows a hundred pair of boots and a section of extra long leather hose during her lonely life of fifty years. Above all things don't boil tea. The heat drives off the perfume, spoils the flavor and extracts the tannin, the astringent principle. If the boiling be done in a tin or iron pot the tannin attacks the metal and makes the liquid black. This fluid is simply diluted ink. Never let the tea stand except in a tightly-closed porcelain pot. Standing changes it from a delicious wholesome beverage into an ill-tasting and bitter liquor. Rather make it in small quantities and make it often. Methinks I hear many good housewives say, "It needs no ghost to tell us this," and yet there are thousands who do need advice on this simple subject. In summer, when you want to cool off quickly, sip the tea boiling hot, with a slice of previously peeled lemon or nicer still of orange, without the rind, floating in it. In winter, especially when you have a cold and require a sudorific, add a wineglassful of arrack to it and drink it down as hot as you can stand it. It will bring out a profuse and healthy pespiration when punch or hot Scotch fail to thaw you out. Beware of green tea! It is an abomination and a fraud. A Chinese Coolie wouldn't give it to his pig. He will give that patient porker dead rats, old boots and other offal, and such unconsidered trifles, but he draws the line at green tea. In the first place it is simply the unripe leaf and bears the same relation to the real article that the "little peach of Emerald hue" does to Delaware's delicious fruit in its richest ripeness. It has the same effect upon the stomach and abdominal nerves as in the case of poor "Johnny Jones and his sister Sue." The green tea of commerce derives its rare color from being cured, or rather killed, on dirty copper pans, from being mixed with weeds and shrubs, from being stained with indigo and chrome yellow, from being colored with verdigris, grass-juice or chlorophyl. Every green dye known to commerce has been used to produce the much admired but death-dealing color, excepting it may be Paris green. As soon as the use of that poisonous substance will give a profit of a cent a pound, you can wager that it will be liberally used by the mercenary Mongolian merchant and the much more mercenary cultured European tea-trader. I'll venture the statement that there is no fine tea in the United States. What goes to our country is the cheap stuff used here by the coolies and jail inmates. When an American housekeeper pays $1 per pound for her Oolong or English breakfast, she is buying what is sold here for twenty-fives cents. No really good tea is sold here for less than $1 per pound by the wholesale. If laid down in the market at home it could not be sold for less than $1.75. This $1 tea is the usual article for clerks, poor tradesmen and mechanics. For the well-to-do, the official class and the nobility, are finer pickings that run from $1 to $50 per pound. The only Europeans who purchase these high-priced leaves are the Russians and a few connoisseurs in France, Germany, Austria, Spain and Turkey. The bold Briton permits patriotism and his purse to guide his palate, and uses the vicious vitriolic horrors of Ceylon and India. Good Uncle Sam patronizes a Cheap John who gives away to each purchaser a $2 cup and saucer with every 25 cent pound of tea. The tea plant is as sensitive and delicate as a West Walnut Street belle. It flourishes best on a mountain side, where it is neither very warm nor cool, where the soil is dry, but the rains and dews are frequent, where the force of the wind is broken by adjacent woods or hills, where there is a maximum of sunlight and, according to Celestials, of moonlight, and where the surrounding ground is kept free from weeds or other vegetable growths. There are farms in Formosa, Fo-Kien and other tea districts where these conditions exist unchangingly, whose tea crop is as famous and as distinctly known in the Eastern world as the various chateaux of France are to the wine experts of Europe. Just as the millionaires of Europe control certain vineyards, so do the millionaires of the Flowery Kingdom control tea plantations whose annual output is worth a king's ransom. Another point of the many we have to learn from the Chinese, is the proper mode of packing the leaf. That which goes to America is dumped as soon as it is "fired," burning hot into a lead-lined box, the lead is soldered and the air-tight coffin is sent around the globe in the hot hold of a steamer. The tea sweats, and undergoes many changes which alters its flavor altogether and vitiates its quality. The Mongolian packs the poorest kind in strong paper packages and these in turn in mortuary lead; the better kind in soft tin paper-covered boxes; still better ones in silver-foil inside of one pound cases made of split sun-dried bamboo, and the best in porcelain jars and vases. He packs in eighths and quarters of a pound, so that if a few leaves are improperly treated or not cured, they will not contaminate much surrounding tea. The Russians compress the tea into bricks, or cover it with silver-foil and many paper wrappings, or else put it in glazed jars. The principle is the same—the subdivision of the tea, and the prevention of risks attending larger packages or in bigger bulk, such as heating, sweating and moulding. This principle we have yet to learn and apply. But ah, the exquisite pleasure to be found in a cup of truly fine tea. The color is a delicate gold; each leaf unfolds into a perfect olive oval; its fragrance fills the banqueting hall, delicate yet penetrating, dainty but distinguishable above all other perfumes, and the flavor! The famous Clover Club Punch pales into dim distance in comparison to this "cup that cheers." Words cannot describe the delight of a brew of fresh Formosa tea. It fills the system and makes every nerve thrill with joy. It lingers on the palate for hours. And "the next day," think of it, O votaries of Bacchus! the brain is clear, the body all alert and the soul ready for the battle of life.

ALCHEMY.

THE OLDEN SEARCH FOR THE PHILOSOPHER'S STONE.

A case recently before the courts induces me to offer a few notes on this subject. Alchemy is said to have been commenced by Hermes Trismegistus, an ancient Egyptian king, and from its earliest ages the discoverer of the philosopher's stone, which was to transmute all baser metals into gold, was one of its chief objects—if, indeed, this were not a cause of its foundation. Those who advocate the great antiquity of chemistry conceive that the alchemical secret is metaphorically concealed in the fable of the Golden Fleece of the Argonauts, rejecting the more probable solution of the story of Strabo, who says that the Iberians, near neighbors of the Colchians, used to receive the gold brought down from the high lands by the torrents into sieves and sheep skins, and that from thence arose the fable of the Golden Fleece. Dionysius of Mytelene offers a different explanation, and supposes it to allude to a book written on skins, and containing an account of the process of making gold according to the art of alchemy. Either of these explanations proves the great value that was set upon gold even in those remote times. The Arabians, it is supposed, introduced gold, silver, etc., into their materia medica, and surprising virtues were attributed to them. Among a people so disposed to magnificence, and, from the very spirit of their religion, credulous and romantic, it is scarcely a matter of surprise that their first researches into the nature of bodies should have raised a hope, and excited a belief, that the baser metals might be converted into gold. They conceived that gold was the metallic element in a state of perfect purity, and that all the other metals differed from it in proportion only to the extent of their individual contamination; hence the origin of the epithet base, as applied to such metals. The alchemists, however, were not satisfied with the idea of changing the base metals into gold; they expected by the same means to produce a universal remedy, the elixir of life, calculated to prolong indefinitely the span of human existence. It is difficult to imagine what connection could exist in their ideas between the philosopher's stone, which was to transmute metals, and a remedy which could arrest the progress of human infirmity. Upon searching into the writings of those times, it clearly appears that this conceit originated with the alchemists from the application of false analogies, and that the error was subsequently diffused and exaggerated by a misconstruction of alchemical metaphors. An example of reasoning by false analogy is presented by Paracelsus in his work "De Vita Longa," wherein, speaking of antimony, he exclaims: "*Sicut antimonium finit aurum, sit, eadem ratione et forma, corpus humanum purum reddit.*" The processes of alchemy were always veiled in the most enigmatic and obscure language. The earliest alchemist whose name has reached posterity is Geber, an Arabian prince of the seventh century, whose language was so proverbially obscure that Dr. Johnson supposes the word "gibberish" to be derived from his name. Sometimes the processes of alchemy were expressed by a figurative and metaphorical style of description. Thus Geber exclaims, "Bring me the six lepers that I may cleanse them," by which he implied the conversion of silver, mercury, copper, iron, tin and lead, the only metals then known, into gold. From the works of later alchemists, it also appears that they constantly represented gold as a sound, healthy and durable man, the imperfect metals as diseased men, and the means of processes by which the latter were to be transmuted into the former they designated by the name of medicines; hence those who were anxious to dive into the secrets of these magicians (or adepts) without possessing the key to their language, supposed that these descriptions were to be understood literally, and that the imperfect metals might be changed into gold, and the bodies of sick persons into healthy ones, by one and the same chemical preparation. This hieroglyphical style of writing, adopted by the earlier alchemists, was, in a great degree, supported by the prevailing idea that the elements were under the dominion of spiritual beings, who might be subjected to human power, and Sir H. Davy has observed that the notions of fairies and of genii, depicted with so much vividness in the "Thousand and One Nights," seem to have been connected with the pursuit of the science of transmutation and the production of the elixir of life. Pliny says

that the Emperor Caligula was the first who prepared natural arsenic in order to make gold of it, but abandoned the attempt because the charge exceeded the profit. Some say that the Egyptians knew the secret. In 1405 the "craft of multiplying gold and silver" was made a felony, which would seem to indicate that roguery was increasing in that direction, but the act was repealed in 1689. In 1476 a license to practice alchemy was granted to one Richard Carter. Sir W. Raleigh, during his imprisonment in the Tower, employed himself largely in chemical experiments, and believed that he had discovered an elixir of life. In 1782 a Dr. Price, of Guildford, published an account of his experiments, in which he pretended to success. He brought his specimens of gold to the King, affirming that they were made by means of a red and white powder. Being a Fellow of the Royal Society he was required, upon pain of expulsion, to repeat his experiments before Messrs. Kirwan and Woulfe, but, after much equivocation and delay, he committed suicide. In 1860 a Hungarian refugee, named Papaffy, represented that he had a system by which he could transform metals into sterling silver. Strange to say, he induced numbers of men of position to advance capital for his operations, when, having raised over £10,000, he quietly decamped. In conclusion, the following process, as recommended by Raymond Sully (born 1235), may be mentioned: "To make the elixir of the sages, or the philosopher's stone, take the mercury of philosophers (lead), calcine it until it is transformed into a green lion (massicot); after it has undergone this change calcine it again until it has become a red lion (minimum). Digest this red lion in a sand bath with acid spirit of grapes (vinegar), evaporate this product, and the mercury will be converted into a kind of gum acetate of lead); put this into a luted cucurbit and distil it with heat. You will obtain an insipid phlegm, then spirit and red drops. Cymmerian shades will cover the cucurbit with their sombre veil, and you will find in the interior a true dragon, for he eats his tail (*i. e.*, the distilled liquor dissolves the residuum). Take the black dragon, break him on the stone and touch him with red charcoal; he will burn, and assuming a glorious yellow color, he will reproduce the green lion. Make him swallow his tail, and distil this product again. Lastly, rectify carefully, and you will see appear burning water and human blood." This substance, called by the alchemists human blood, is a reddish-brown oil, which is formed during the distillation of the acetic acid in the above process. It has the property of precipitating gold from solution containing that metal, which probably gave rise to an idea that it possessed the virtues which were so eagerly sought after. I am indebted for most of the information in this article to "Paris Pharmacologia," "Haydn's Dictionary of Dates," and Bell and Redwood's "Progress of Pharmacy."—*Brit. and Col. Drug.*

Exhaustion

Horsford's Acid Phosphate.

The phosphates of the system are consumed with every effort, and exhaustion usually indicates a lack of supply. The Acid Phosphate supplies the phosphates, thereby relieving exhaustion, and increasing the capacity for labor. Pleasant to the taste.

Dr. A. N. KROUT, Van Wert, O., says:

"Decidedly beneficial in nervous exhaustion."

Dr. S. T. NEWMAN, St. Louis, Mo., says:

"A remedy of great service in many forms of exhaustion."

DESCRIPTIVE PAMPHLET FREE.

RUMFORD CHEMICAL WORKS,

PROVIDENCE, R. I.

BEWARE OF SUBSTITUTES AND IMITATIONS.

CAUTION:—Be sure the word "Horsford's" is *printed* on the label. All others are spurious. Never sold in bulk.

BUSINESS NOTES.

HORSFORD'S ACID PHOSPHATE

Relieves the feeling of lassitude so common in midsummer, and imparts vitality. Dr. L. C. S. Turner, Colfax, Ia., says: "I am very much pleased with it in mental depression from gastric troubles."

WARNER'S PILLS.

We beg to call the attention of our subscribers to Messrs. Warner's advertisement. Their pills are thoroughly reliable, and being carefully sugar-coated, are entirely tasteless. The use of sugar as a coating for pills has been objected to. It has been stated by some that in sugar-coated pills the drugs become dry and hard, and soon lose their efficiency. This we can state for a positive fact not to be the case, having lately used and examined some of Warner's pills which had been kept in stock for over four years, and in which, on section, the mass was found to be quite soft. From our own experience, we have no hesitation in recommending others to use these preparations, as they are sure to be reliable and to give satisfaction.—*Canada Medical and Surgical Journal.*

MUSKY MOSQUE.—When the mosque of St. Sophia, in Constantinople, was built, more than one thousand years ago, the stone and brick were laid in mortar mixed with a solution of musk, and the building, it is said, has been infected with the odor ever since. Probably age has imparted a musty odor, from which the musk story was fabricated.

CHEAP DISINFECTANT.—A disinfectant that costs very little and is perfectly odorless, is made by dissolving a heaped teaspoonful of nitrate of lead in a quart of boiling water, stirring it with a stick and then adding it to a pail of cold water. This is odorless and will not stain; it costs about 3 cents, and if it is thrown once a week down the bath-tub, closet and stationary wash-bowl, it will be money well spent.

ONION GLUE.—Paper may be securely gummed to metal by the aid of onion juice. The dials of cheap clocks used to be printed on paper and then glued to a zinc foundation, but after a short time the paper came off the metal. Now the zinc is dipped into a strong solution of washing soda, and afterwards is washed over with onion juice. The paper is then pasted on, and it is almost impossible to separate it from the metal.

OIL FOR FUEL.—Coal is scarce and high in the Argentine Republic, and many of the locomotives of the Argentine Great Western railroad are being fitted for the use of petroleum as fuel, and it will probably supercede all other fuel on that road. The oil used is a heavy petroleum found at Mendoza, near the line of the road, which answers the purpose of fuel fairly well, although it has been found impossible to refine it so as to make a good lamp oil. The economy is very considerable as the railroad company can procure this oil at present at a cost of $12 paper per ton—equivalent to about $3 gold—while English coal, which has been used on parts of the line, costs $20 gold, per ton.

ORIGINAL. No. 30.

Hominy Gems.

BY MRS. D. A. LINCOLN,
Author Boston Cook Book.

Mix 2 table-sp. fine, uncooked hominy, ½ tea sp. salt, 1 table-sp. butter, and ¼ cup boiling water. Place this over the tea kettle until the hominy absorbs all the water. Pour 1 cup boiling milk on 1 scant cup fine yellow corn meal; add 2 table-sp. sugar and the hominy. Let it cool slightly, then add the yolks of 2 eggs beaten to a light froth, then the whites beaten stiff. Stir in 1 level tea sp. Cleveland's baking powder and bake at once in hot buttered gem pans, about 20 minutes. A scant cup of cold boiled hominy may be used instead of the fresh hominy. It should be sifted through a squash strainer, to free it from lumps.—(Copyright, 1891, by Cleveland Baking Powder Co.)

Use only Cleveland's baking powder, the proportions are made for that.



"Cleveland's Baking Powder; the best in quality, highest in leavening power and perfectly wholesome." A. F. Underwood, U. S. Government Chemist, 1891.

25 CTS PISO'S CURE FOR 25 CTS.
CURES WHERE ALL ELSE FAILS.
Best Cough Syrup. Tastes good. Use in time. Sold by druggists.
CONSUMPTION

Fine Table Wines

From our Celebrated Orleans Vineyard.

Arpad Haraszthy & Co.

Producers of the

ECLIPSE

CHAMPAGNE,

530 Washington St.

SAN FRANCISCO.

GENERAL AGENCIES:

NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOS. H. PEEBLES' SONS CO., 73 West Fourth Street.
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.

PURE PEPSIN

In Powder and Scale.

MANUFACTURED BY

ARMOUR & COMPANY,

Chicago.

Guaranteed free from adulteration or make-weights; of excellent physical properties and high digestive power.

Under similar conditions, **ARMOUR'S PEPSIN** will exhibit greater activity than any other pepsin now before the profession.

The Manufacturers will be pleased to supply members of the Medical Profession with samples of their Pepsin, and with full details regarding digestive strength, if desired.

SEE PAGE 381 FOR VALUABLE OFFER.

WATCHES.

EVERY one wants a watch, and naturally a good watch that keeps accurate time, presents a handsome appearance, and is inexpensive. If such a watch can be found of American manufacture, it is an additional appeal to our patriotism. Just such a watch as this ideal THE ANALYST PUBLISHING COMPANY is enabled to offer as a Premium to its readers. Having some large advertising contracts we have been enabled to procure the movements of the manufacture of the best known American watch factories, namely, the Waltham, Elgin, Hampden and Illinois Watch Companies. These movements are adapted for both ladies' and gentlemen's watches, and are warranted by the makers. These movements have seven jewels, patent lever movement, chronometer balance, patent safety pinion, sunk hard-enameled dial, straight line visible palette, stem winders, hand set; in fact, contain all the latest improvements and can be readily cleaned or repaired by any ordinary good watchmaker. They can be regulated to run as close as any movement.



It is needless to say that to case these movements in solid gold cases would make them too expensive, yet they are cased in what are known as gold filled or stiffened "Ladd" cases, and are warranted to be 14 karat gold, made from two sheets of 14 karat gold overlaying fine composition metal, with regular jointed caps, covers and bezels, and to wear at least five years. They are not plated, nor rolled gold, but actual 14 karat gold cases, thin of course, but stiffened and strengthened by being filled with this fine composition metal. They are finished in the same manner, engine turned and engraved as solid gold watches, and wear and look just the same. No one but an expert can tell them from a solid gold watch. These watches are made both open face and hunting case style, in gentlemen's or ladies' sizes. For gentlemen we recommend plain engine-turned cases; for ladies, a handsomely engraved case.

How to Obtain One of these Watches.

These watches are not to be purchased from us at any price. Send us a club of 25 subscribers to the AMERICAN ANALYST, and $25, the regular subscription price, and one of these watches (your choice of style and size) will be immediately forwarded, post-paid and registered, to your address. You need not wait until you have your 25 subscribers all together, but forward them as you get them and they will be credited to you, and when the number is complete the watch will be sent. A subscription for two or three years will be counted as two or three subscribers.

As these watches are retailed by jewelers at not less than $25, it will be seen that we are offering a real premium with the sole object of increasing our circulation, and that by taking advantage of our offer any one can obtain a good, reliable and handsome watch without cost. As the number of these watches at this price is limited, it is advisable to take steps at once to procure a bargain.

THE ANALYST PUBLISHING CO., 19 PARK PLACE, NEW YORK.

BICYCLES

GIVEN AWAY TO BOYS AND GIRLS!

AN OPPORTUNITY OPEN TO ALL.

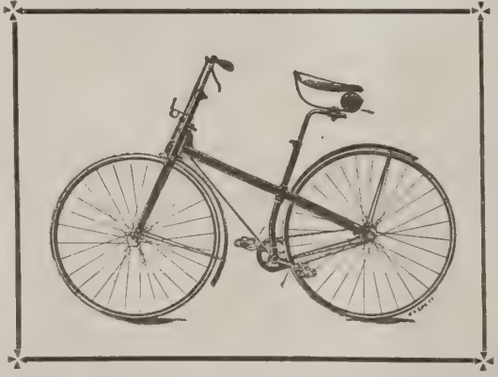
The Analyst Publishing Company being desirous of largely increasing their subscription list, will furnish every one with a beautiful Safety Bicycle, ABSOLUTELY FREE, in return for a few hours' canvassing.

To every boy and girl who secures 75 subscribers for the American Analyst at $75, we will give a splendid

$40.00

NONPAREIL

SAFETY BICYCLE.



These bicycles are adapted in size to boys, but are strong enough to carry a man. A boy's bicycle should be a strong one. They are manufactured by the OVERMAN WHEEL CO., the makers of the celebrated VICTOR Bicycle, and have the full guarantee of the makers.

The following is a brief description of the NONPAREIL SAFETY; 26-inch wheels; ball bearing all around, including pedals; solid crescent rims; double tangent spokes; three-fourths inch tires; cranks, three throw, $4\frac{1}{4}$ to $5\frac{3}{4}$ inches; guards to both wheels; tool-bag, oiler and wrench. Finished in bright enamel, all exposed metal heavy nickel-plate on copper.

In selecting these machines as a premium, we have disregarded cheapness and selected a Bicycle which is serviceable, and the makers of which have an established reputation for building the best Bicycle that money, machinery and brains can produce. We are actually furnishing the Bicycles and Papers at less than cost, but hope by stimulating active and successful canvassing, and thus enlarging our subscription lists, to make an eventual profit. We positively guarantee these bicycles to be just as here represented. They will be shipped by express f. o. b. in New York.

Subscription orders must be made out plainly and legibly, and sent as fast as secured, addressed to

THE ANALYST PUBLISHING CO., 19 Park Place, New York.

ONE YEAR FREE.

If you will send us the addresses of Twenty-five Ladies in your neighborhood to whom we can send sample copies of the **AMERICAN ANALYST,** we will send this paper to you free for One Year; or, for Fifteen names, Six Months; or, for Ten names, Three Months. We do this because our past experience assures us that any lady who once becomes acquainted with the value of the **AMERICAN ANALYST,** continues to subscribe for it. We also offer valuable premiums for raising clubs.

HAMMOND'S

CELEBRATED

Calumet Oleomargarine

Strictly pure, cheap and healthful.

Ask your grocer for it.

Put up in packages of all sizes, also prints and rolls.

C. H. HAMMOND CO.,

607 to 615 THE ROOKERY,

CHICAGO.

Also offices at Boston, South Omaha, Neb., and Hammond, Ind.

THURSTON'S IVORY PEARL TOOTH POWDER
WILL KEEP THE TEETH IN PERFECT CONDITION AND THE GUMS HEALTHY.
Price 25 & 50 Cents PER BOTTLE.

DETECTIVE! WE WANT A MAN IN every **locality** to act as **Private Detective** under our instructions. Send stamp for particulars.
WASHINGTON DETECTIVE AGENCY,
Box 787. Washington, Iowa.



We shall be glad to supply our readers with any periodical published at club rates.

Send us a postal naming periodical and we will quote you prices.

ANALYST PUBLISHING CO.,
19 Park Place,
New York.

FORTUNE TELLING FISH!!
ALMOST HUMAN in its Movements and Actions.
GREATEST NOVELTY OUT. Gives exact definition of character. Can be carried in vest pocket. **AGENTS COIN MONEY.** Sample sent to any address **10c.,** one dozen **75c.,** three dozen **$1.50,** postpaid.
EUREKA MANUFACTURING CO., Hinsdale, Ill.

LADY AGENTS WANTED.

I have a medical specialty for ladies use, which is one of the best selling articles in the country. You can make a good income handling it, and at the same time be doing your sex a great benefit. Write me at once for full information and exclusive territory. If you wish a sample sent enclose 12 cents postage. Dr. H. H. Jackson, 103 State Street, Chicago.

We can save you Fifty Dollars when you Build. See



A complete set of Plans to build from, simply state about price of dwelling desired. 25 cts. in stamps. Our book "Beautiful Homes," 25 cts. Our monthly book "The National Builder," 25 cts. Address
The National Builder, Adams Exp. Bldg., Chicago, Ill.

HARTSHORN'S SELF-ACTING SHADE ROLLERS

NOTICE SCRIPT NAME OF *Stewart Hartshorn* ON LABEL, AND GET THE GENUINE

HARTSHORN

GOLD MEDAL, PARIS 18[illegible].



W. BAKER & Co.'s Breakfast Cocoa

from which the excess of oil has been removed,

Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

TEAS

REVOLUTION IN PRICES.

Direct from TEA GROWERS to TEA POT.

Finest Teas Imported.

Send in your orders at once. On $20.00 Tea and Baking Powder orders, we will allow you a **Complimentary,** in any kind of Tea you may select, equal to **25** per cent. and **Pay all Express Charges.** This is an unprecedented offer. Remember we are the **"Old Reliable,"** THE GREAT AMERICAN TEA COMPANY Established 1861. No discounts, No Premiums, No Panels.

PRICES OF TEAS & BAKING POWDER.

OOLONG,	30, 35, 40, 50, 60, best 65 cts. per lb.
MIXED,	30, 35, 40, 50, 60, best 65 " "
JAPAN,	35, 40, 50, 60, 70, 80, best 90 " "
ENGLISH BREAKFAST,	35, 40, 50, 60, 70, 80, best 90 " "
YOUNG HYSON,	35, 40, 50, 60, 70, 80, best 90 " "
IMPERIAL,	35, 40, 50, 60, 70, 80, best 90 " "
GUNPOWDER,	50, 60, 70, 80, 90, best 1.00 "
BASKET FIRED JAPAN,	50, 60, 70, 80, best 90 " "
CONGOU ENGLISH BREAKFAST,	50, 70, best 90 " "
SOUCHONG "	50, 70, best 90 " "
FORMOSA OOLONG,	50, best 65 " "
ORANGE PEKOE,	50, best 70 " "
ASSAM,	50, best 70 " "
BAKING POWDER, in One Pound Tin Cans,	45 cts. per can.
BAKING POWDER, in Half-pound Tin Cans,	25 " "

All goods warranted to give perfect satisfaction, or they can be returned and exchanged or money refunded, and all expenses paid by us.

THE GREAT AMERICAN TEA COMPANY,

— IMPORTERS, —

31 & 33 Vesey St., P. O. Box 289. New York.

N. B.—Only inducements are *Best Goods* at *Lowest Prices.*

PUBLICATIONS OF THE

ANALYST PUBLISHING CO.

THE AMERICAN ANALYST.
Weekly. Every Thursday. $1 per year.

THE ROOFER, TINNER AND SHEET-IRON WORKER.
Monthly. 15th each month, $1 per year.

THE LEATHER MANUFACTURER.
Monthly. 1st each month. $3 per year.

Reliable agents and representatives wanted everywhere on liberal terms. Address

ANALYST PUBLISHING CO.
19 PARK PLACE, NEW YORK.

"BILLET"

are

Carefully Selected French Sardines, Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS.



We Can Save You Fifty Dollars When You Build.

If you are thinking of building a home, here is an opportunity to secure one or several designs of houses which will aid you in deciding just what you want.

PLANS READY TO BUILD FROM

ONLY 25 CTS. EACH

Or Five Sets for One Dollar.

The designs given below to select from are practical and are drawn to a large scale by Geo. O. Garnsey, architect for THE NATIONAL BUILDER. Each one consists of a large, beautifully colored picture of a front elevation, including the floor plans, the details, the specifications, and carefully prepared estimates of cost, and all ready to build from. By a special premium arrangement we are enabled to sell these plans at the above extremely low price. **Specify number of Design.** Send all orders to

THE ANALYST PUBLISHING CO.,

No. 19 PARK PLACE, NEW YORK CITY.

No. 2. **Clover Cottage.** Neat, cosy and modern. Cost, $1,960.
No. 3. **6-Room Elegant Brick Residence.** Suitable for city or country; Handsome Front, Good Basement, etc. Cost, $3,500.
No. 4. **6-Room Modern Residence.** Handsome Front, with broad circular Veranda. Cost, $3,000.
No. 5. **Cheap 5-Room Genteel Cottage:** With Reception Hall, 9x12, and good Basement. Cost, $2,000.
No. 6. **8-Room Residence.** Handsome Front, neat Porch, etc. One of a series of residences much in demand. Cost, $3,000.
No. 10. **Bank and Store Fronts.** Showing different styles of Show Windows, and highly Ornamented Fronts. Two designs. Cost, $1,613 and $1,325.
No. 17. **Double City Flat Building.** Six rooms in each flat; building adapted to narrow lot. Ornamental, Romanesque Front. Cost, $10,000.
No. 19. **Queen Anne Cottage, Eight Rooms.** Good light; exhibiting good effect. Cost, $4,000.
No. 21. **Maplewood Cottage, Three Rooms.** Abundance of piazza. Very neat and convenient. Cost, $1,000.
No. 22. **Hyacinthe Cottage, Three Rooms.** Very odd and pleasing. Cost, $750.
No. 23. **Clovernook Cottage.** New in style. Cost, $750.
No. 25. **Eastlake Cottage, 8 Rooms.** Neat Ivory Frame. Cost, $1,875.
No. 26. **Eastlake Stone Cottage, Six Room.** This design is handsome. Cost, $2,575.
No. 38. **Cheap City House, Eight Rooms.** Suited for inside lot; nicely laid out. Cost, $2,600.
No. 40. **Charming Suburban Cottage of Five Rooms.** Very roomy and convenient. Cost, $2,500.
No. 42. **Beautiful 6-Room Cottage.** Handsomely designed; all modern improvements. Cost, $3,100.
No. 49. **Neat Village Church.** Seating capacity about 600. Cost, $7,500.
No. 50. **Store and Office Building.** Brick; 2 stores and 8 offices, very handsome. Cost, $7,000.
No. 51. **Modern Suburban Residence of Nine Rooms.** Beautiful design. Cost, $2,100.
No. 57. **Rosedale Cottage, 3 Rooms.** With Bay Window, Frame. Cost, $1,000.

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,

HOWARD STREET, BOSTON, MASS.

OUR GREAT OFFER

TO SUBSCRIBERS

TO THE

AMERICAN ANALYST.

We will send the **ENTIRE SET OF DICKENS' WORKS,** *in* **TWELVE VOLUMES,** *as here described, all postage prepaid by ourselves, also* **THE AMERICAN ANALYST** *for* **ONE YEAR,** *upon receipt of* **$1.50,** *which is only* **50** *cents more than the regular subscription price of this paper.* Our readers, therefore, practically get a set of Dickens' works in twelve volumes for only **50** cents. This is the grandest premium ever offered. Up to this time a set of Dickens' works has usually been $10.00 or more. Tell all your friends that they can get a set of Dickens' works in twelve volumes, with a year's subscription to **THE AMERICAN ANALYST** for only **$1.50.** Subscribe now and get this great premium. If your subscription has not yet expired, it will make no difference, for it will be extended one year from date of expiration. We will also give a set of Dickens', as above, free and post-paid, to any one sending us a club of three yearly subscribers.

ADDRESS:

THE ANALYST PUBLISHING CO.
No. 19 PARK PLACE,
NEW YORK.

TABASCO PEPPER SAUCE,

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced by connoisseurs to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY'S SON,

NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

NATRONA BI-CARBONATE OF SODA.

ABSOLUTELY PURE.)

The nature of the raw material from which NATRONA BI-CARBONATE OF SODA is made—viz., kryolith, a mineral containing *pure sodium*—insures a purity and uniformity of product which cannot be obtained from any other known material. In making BI-CARB. SODA from any other raw material, the use of sulphuric acid is a necessity, but none is used in any part of the process of making NATRONA BI-CARB.; hence its entire freedom from the slightest trace of arsenic, which is always present in ordinary soda. Its absolute purity and entire freedom from all traces of *sulphate of soda*, common salt and other impurities, render NATRONA BI-CARB. NEARLY TASTELESS, and being bolted through the finest bolting-cloth, insures the finest stage of division.

To these indisputable facts the attention of CONSUMERS of soda is specially called. They are IMPORTANT, and should influence both those who use and those who sell soda, to buy and sell NONE BUT THE BEST.

The NATRONA BI-CARB. Soda is kept in stock by almost every wholesale druggist and grocer throughout the United States, of whom it may be ordered.

Natrona Bi-Carb. Soda is unequaled by any other brand of English or American Manufacture.

PENNA. SALT MANUFACTURING CO.,

NATRONA CHEMICAL WORKS. PHILADELPHIA, PA.

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

To Subscribers, Readers and Advertisers.

SUBSCRIBERS' attention is called to the great variety of interesting and instructive subjects treated in this number. We respectfully ask the co-operation of our subscribers in extending our Subscription list, which will enable us still further to increase the value of the AMERICAN ANALYST to them.

The CASUAL READER is specially requested to examine our liberal premium offer.

ADVERTISERS who do not know of this Journal already, are respectfully referred to article headed "A Business Benefit."

ALL are kindly requested to peruse this number thoroughly.

The AMERICAN ANALYST can be had at any news stand in the United States. Any newsdealer will take orders for it, the American News Company being our wholesale agents. All postmasters will receive subscriptions.



RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,
184 Greenwich St., N. Y.

INSTRUCTIONS TO SUBSCRIBERS.

The **Names of all Subscribers** are registered as soon as received, and paper is always promptly forwarded.

Postage.—The postage to all parts of the United States and Canada is paid by the publisher.

Remittances of small sums may be made with comparative safety in ordinary letters. Sums of one dollar or more must be sent by registered letter or P. O. money order, otherwise we cannot be responsible for same. Silver must not be sent in a letter.

Postage Stamps will be received for the fractional part of a dollar, and in any amount when it is impossible for patrons to procure bills, but you must send one or two-cent stamps only.

SUBSCRIPTIONS.—The AMERICAN ANALYST will be sent one year to any subscriber for ONE DOLLAR. New subscriptions can begin at any time.

We Stop the Paper at the expiration of the time paid for unless a renewal of subscription is received. Those whose subscriptions have expired must not expect to continue to receive the paper unless they send the money to pay for it.

Change of Address.—Subscribers wishing their addresses changed must invariably give their former as well as new address.

Missing Numbers.—It occasionally happens that numbers of our paper sent to subscribers are lost or stolen in the mails. In case you do not receive any number when due, write us a postal card and we will cheerfully forward a duplicate of the missing number.

Most Important of All.—In every letter that you write us, never fail to give your full address, plainly written—name, post-office, County and State.

Address all letters to

THE ANALYST PUBLISHING CO.,
19 Park Place, New York.



A HIGH-GRADE PIANO

AT A VERY MODERATE PRICE.

NEW DESIGNS. FANCY WOODS.

Terms Easy. + Monthly Instalments.

TWO, THREE AND FOUR PEDALS.

Catalogues, Prices, Terms, Etc., sent to any address.

EVERY PIANO WARRANTED 5 YEARS.

(Mention this Paper.)

THE LABORATORY.

To Inventors, Manufacturers and Applicants for Patents

The AMERICAN ANALYST may be consulted upon all matters involving theoretical or applied chemistry. Advice and opinions given. Analyses and assays made. Patents perfected and secured. Terms reasonable.

Address, AMERICAN ANALYST,
19 Park Place, N. Y.

SWIFT'S

CHOICE

Chicago Dressed Beef

AND

MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,

UNION STOCK YARDS,

CHICAGO, ILLS.

THE ORIGINAL AND GENUINE
(WORCESTERSHIRE SAUCE).



LEA & PERRINS' SAUCE

In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—

Lea & Perrins

Beware of Imitations; see that you get Lea & Perrins'

For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS, NEW YORK.

GLENN'S
SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,

C. N. CRITTENTON,
115 FULTON STREET,
NEW YORK.

Be progressive and keep abreast of the times. Avoid dyspepsia by using **Lard Compound** and **Cottolene,** a substitute for lard.

The highest medical authorities pronounce them healthful; and expert cooks commend them.

Our **Clairette** brand of cotton oil soap is the purest and best laundry soap in the market; as pleasant to the hands as genuine castile.

N. K. FAIRBANK & CO.,
CHICAGO AND ST. LOUIS.

The Standard of Excellence.

KINGSFORD'S

OSWEGO

Pure and Silver Gloss



STARCH

KINGSFORD'S
OSWEGO CORN STARCH
FOR
Puddings, Custards, Blanc-Mange, Etc.
THE PERFECTION OF QUALITY.
WILL PLEASE YOU EVERY TIME.
Always ask your Grocer for these goods.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 33. NEW YORK, THURSDAY, AUGUST 13, 1891. WHOLE No. 233

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - $1 per year.
Single Copies, - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.
Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.
Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,

H. LASSING, M. D., T. P. McELRATH, } *Editors.*

No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

An Ice Cream Factory 386
Angel Food 389
Cheap Candy 389
Dædalus in Science 390
Domestic Dietetics 389
Editorials 385
Midsummer Reflections; The Substitute Imposition.
German Cookery 388
Life's Romance 389
Trees and Moisture 387
Vacation Preparations 387

MIDSUMMER REFLECTIONS.

It is now nearly seven years since the AMERICAN ANALYST began its mission as an advocate of pure food and an opponent of sham products. The history of its labors in that field, even if confined to a reviewal of the success it has achieved in exposing and defeating unscrupulous schemes involving risk to the health and depletion to the purse of the public, would require greater space to rehearse than is available within the limits of this page. The shades of defunct swindles in the shape of pretended nerve foods, possessing the potency of root beer; of alleged opium cures, better calculated to stimulate than to destroy the craving for that soul and body debasing drug; of baking powders stuffed with poison, and of a host of other exposed sophistications in the various departments of food, drink and pharmacy, are still flitting about the graveyard of illicit cupidity, awaiting absorption into the limbo of fraudulent failure to which the efforts of the AMERICAN ANALYST have consigned them. Our uncompromising denunciation of charlatans, adulterators and handlers of poisonous food, has operated to the advantage of the public generally and of the manufacturers of genuine goods specifically, and the latter have not been slow nor niggard in their recognition of our services. As we have heretofore had occasion to explain, in relation to the purposes of this journal, humbugs seeking to enrich themselves through the sale of high-sounding specifics for various human ailments, are subjected to the crucial test of thorough chemical analysis of their goods, and where the latter, as too frequently occurs, prove to be frauds, the facts are placed before our readers in order to save the public from further unconscious imposition. The veil of chemical mystery in which tricksters of this kind ostentatiously envelope their processes of manufacture, protects them from the criminal laws to which other confidence operators are held amenable, and the only method as yet for counteracting their nefarious schemes is through public exposure by the newspaper press. The bunco steerer, the counterfeit money vender, and the whole class of rogues who prey upon the lawless greed of mankind, are far less culpable, from a moral standpoint, than their more expert brethren in rascality, who fatten themselves by the sale of worthless concoctions which they falsely represent as competent to relieve the physical sufferings of their fellow creatures. The AMERICAN ANALYST, in addition to the warfare it wages against that species of malefactor, co-operates regularly with the Boards of Health of this and other cities in efforts to secure sanitary and food reforms through organized efforts, and it is conceded to be the only popular medium through which those bodies can bring their purposes and action intelligently before the general public. Reaching as it does all classes—manufacturers, merchants, physicians, chemists, and private families—all over the land, its influence is exerted over a vast radius, producing results as visibly marked as they are widespreading. The abuses it is combating are too numerous and powerful to be speedily suppressed. The effrontery of fraud combined with the arrogance of capital constitute a resisting force not readily overcome, though the ultimate issue is inevitable. The scope of this journal, however, is not limited to the missionary work above described. Its varied contents cover almost the entire field of scientific as well as social progress, and each yearly volume constitutes a compendium of current facts in nearly every department of knowledge such as can nowhere else be obtained in such comprehensive shape and so cheaply. In this relation we take occasion to publish here a few extracts from a large number of similar compliments that we have received from strangers as well as from our regular patrons. A New Haven editor writes: "As a newspaper man, and one with a strong, active instinct for good miscellany matter, I want to congratulate you on your publication. The ANALYST is certainly a unique and valuable periodical, and I feel sure that if you press its sale you will gather in thousands who are waiting only to see it before subscribing." A London editor writes us: "I have just seen your excellent paper for the first time, and I am quite delighted with it. I wish you would exchange it for my magazine." A New York journalist, one of the most famous in the profession in America, bore down on us with the following unexpected praise: "I cannot refrain from congratulating you on the ANALYST. Its brainy suggestions make it one of the most welcome of my exchanges." A well known scientist says, in the course of a letter on other subjects: "Part of my leisure this summer has been devoted to cutting up my files of scientific papers. It may please you to know that I was astonished to find how perfectly you have kept the ANALYST abreast of scientific thought. It is indeed a valuable paper, and I congratulate you on your success in making it so worthy an addition to technical literature." These extracts will suffice to show the estimation in which the AMERICAN ANALYST is held by experts familiar with its purposes and methods. It is essentially a paper for the family, and with the low subscription price of only one dollar, it ought to find regular and welcome lodgment in every household in the United States.

THE SUBSTITUTE IMPOSITION.

The attention of the National Editorial Association during its recent convention at St. Paul, Minn., was called to a species of fraud which, though petty in detail is very extensive in the aggregate, known as the substitute swindle. The operation of the business was thus explained: There are many pharmaceutical preparations of a standard character which have attained to a high sale and widespread reputation by their legitimate merits, and the liberal advertising of their proprietors. Certain unprincipled druggists and small dealers have taken advantage of these circumstances to counterfeit these goods by imitating them just closely enough to keep themselves out of the clutches of the law. In Detroit, and in other cities, there are houses whose entire business consists in manufacturing imitations of these articles or "substitutes," which are made so as to closely resemble the originals in materials used, in the name, and in the general appearance of the boxes, bottles, or wrappers. As an inducement to these small dealers, and the better to enable them to carry out the swindle, their names are frequently printed on the packages by the manufacturers, and the false caption "our own make" is often added. It is easy to see how the swindle is worked. A customer inquires, for instance, for Blank's Emulsion; the dealer replies that he has it—which probably is untrue—but he recommends the customer to buy a preparation put up by himself, which he claims to be equally as good, and which, he says, he can recommend because, he pretends, he has

"compounded it himself" and it is his "own make," and besides, while Blank's Emulsion may be 50 cents a bottle, he can sell his own preparation at 25 cents. Nine times out of ten the customer, relying on the statement of the druggist, will be induced by motives of economy to take the substitute, which, of course, is worthless and may be dangerous. The dealer is enabled to do this because he buys very cheaply from the manufacturer, and thus the two get the benefit of the advertising of the genuine material and divide large profits. Thus an unsuspecting public is swindled. It is needless to say that the dealer who will descend to this contemptible business merely because he can make a larger profit upon the substitute than he can upon the genuine article, is a common swindler, and none the less because the trick is devised so cunningly as to save him from prosecution and deserved punishment. It is a fraud upon manufacturers who are making a legitimate article, and who have spent thousands of dollars to bring it before the public, and a fraud upon customers who are tricked into buying a bogus article which is worthless, if not something worse. It is time that this contemptible business was stopped, and it can be if the press of the country will ventilate and expose it, and if the public will refuse to patronize druggists who palm off these nostrums upon it. Customers should demand the article they have every reason to believe is the best, and if the dealer begins the old story recommending a preparation he has made himself, which he knows to be pure because he made it, which has his name on the wrapper, etc., it should be sufficient cause to refuse it promptly and go elsewhere for their goods. It is the lowest and meanest form of common thievery, and if the public will join hands with the press it can be broken up. It is certainly for the interests of the former to do so, as it is the principal sufferer.

AN ICE CREAM FACTORY.

DESCRIPTION OF AN ICE CREAM CAVERN IN THE METROPOLIS.

The following interesting account of the manufacture of ice cream in one of the large wholesale establishments of New York is from the N. Y. *Sun* of August 2. The scene is laid underground in a locality in the "down-town" section of the city. Descending a flight of steps the main floor was reached by the reporter and his guides, whence corridors branched forth in all directions, and each corridor was well filled with busy men who toiled in silence. So intent were they upon their work that they scarcely noticed the stranger's advent, although each one smiled upon and nodded to the guides. Strewn about in great but orderly profusion were countless boxes, vats, tanks, casks, barrels, and numerous other receptacles, each one either surrounded by or filled with ice. Then there was an imposing array of stout-looking ironclad cans containing pure cream, cooled almost to the point of freezing. And it was ready to be frozen, too. The cavern was an ice cream factory—the largest of its kind in New York city, and probably in these United States. It occupies the entire cellar and sub-cellar of a big down-down building and is always in operation, although it is only in full blast during the summer season. It was in full blast on this occasion. In one section of the large room was a group of men. They were preparing the rich, pure, raw cream for the freezers. After having been properly flavored with expressed fruit juices the huge cans, not quite filled, yet containing several gallons of cream, were conveyed to the whipping wheels. There blades or whippers were inserted in the cans, covers were tightly clamped on, and steam power brought to bear upon the machinery. This started with an ear-rasping squeak and a subdued roar, which was quickly succeeded by a crushing, grinding noise as the cans were whirled about in their beds of ice and the whippers did their work. For ten minutes this continued, and then the cans were removed to make room for others. Thus the process continues throughout every day of the rush season. Nobody in any of the departments has a chance to be idle. Everybody, in fact, has to hustle himself to keep up with the others. From the mixers and the whippers the cream, which by this time has considerable consistency, is passed to the hands of expert brickmakers, who work at a long, wide table. How their hands fly as they load the moulds! How their white-capped heads bob about and their spotless aprons flutter as they bend all their energies to their work! Deftly, layer upon layer of cream is laid in the zinc pouches. One man quickly but neatly dashes in a quantity of water-ice and some vanilla cream. The receptacle is passed to another workman, and he, with equal dexterity, adds strawberry and chocolate creams in sections, claps on the cover tightly, and buries it in salt and ice in a corpulent-looking freezer at his elbow. There the temperature is eight degrees below zero, and there that little brick of cream reposes until it is frozen solid. Next the freezers containing the bricks are rolled around to the opposite side of the table. As fast as one man is able to remove the zinc moulds another takes them from his hands. At his side is a cask of hot water. Into this he plunges the brick and gives it a terrible scalding, although of only a moment's duration. It is, however, sufficient to cause the brick to relax its hold on its coffin, and when the expert sharply raps the metal upon the table the brick, in beautifully variegated colors, drops upon the table a glistening, oblong square of sweets. Instantly the expert seizes it, and with flashing speed, but unerring accuracy, places it on the bed of a queer little machine, which is called a slicer. One downward movement of a lever and six set knives cut the brick into six equal portions. These toothsome bits are handed to other men, who quickly wrap them in white paper overcoats, fit them into pasteboard boxes, and they are then passed to still other men, who pack them away in great storage tanks, where the weather is like a Manitoba midwinter; then they are ready for the market. Branching off from a corridor formed by a series of white-painted pillars is a different set of men. They are busy, too, but, while their work is similar to that of the others, still it is more complex and difficult. These men make and freeze the French and other finer and more expensive varieties of creams, glaces and ices. They also mould the works of art in ice cream which so often adorn the banquet tables on occasions of public or private consequence. At short notice they produced a life-like representation of the Father of his Country. His features, which, by the way, were of vanilla cream, were easily recognized, but not his chocolate wig. His regimentals might have passed muster at a long-distance inspection or before a near-sighted officer, but not otherwise, for his coat was of light green and its lapels of strawberry hue, but still the buttons and epaulettes were there, as were the vanilla-hued trousers, and the boots, which were represented in deep and enduring brown. In the making of French ice cream a copper kettle, connected with machinery, is made to revolve in a wooden tank containing salt and ice. No cover is attached to the kettle, and the cream is kept in motion and clear of the sides by an attendant who is armed with a long stick. This man cleaves to his task until the cream is frozen to the proper consistency. Very interesting was the process of making a biscuit glace. Handy by the expert was a big copper bowl. It would probably have held two or more gallons. Into this was emptied several quarts of raw cream. Then a lusty-looking individual with a bulbous brush formed of wires approached the bowl. As he drew near its edge he halted, nerved himself for an effort, and raised his arm. The wire brush descended upon the cream with a rotary motion, and the implement went through the liquid with a loud and spiteful swish! Again and again this was repeated, and faster fell the strokes until the cream had lost all its original semblance. Now it looked not unlike a monster ball of cotton in its snowy fluffiness, and occupied half again as much space in the bowl it had done at the beginning of the operation. It was evidently hard work for the man who was doing the lashing, for he got very red in the face, and beads of perspiration stood upon his brow when he had finished the task, even if it was zero weather within ten feet of that very spot. Next the cotton like ball was sweetened, flavored and frozen. Then a mould shaped like half a watermelon and ices of varied colors and flavors were produced. Into each rib of the mould went the ices, no two a kind being in adjoining ribs. Then enough of the frozen cottony ball was placed in the mould to fill it, and, after having been covered, it was firmly frozen in a freezer. That's about all there is of it, for the next thing to be done is to slightly warm the mould, remove the delicacy within, and, after feasting the eyes upon thispoem in sweets, eat it. In the flavor manufacturing department fresh revelations were in store. There vanilla beans, chopped almost as fine as sawdust, had been put in glass jars with granulated sugar and the air excluded. On the shelves of a cool, dark closet the vessels were arranged, and there they are left until by a peculiar natural process a thick, ropy syrup is evolved. This is then taken to the boiling room, where it is boiled strained, and all impurities removed. It is then ready for use in the cream. That delicate shade of green similar to that variety of French cream known as pistache, is afforded by the meat of the pistache nut. Although the nut is imported from Europe, its rich heart is ground in this great ice cream cavern, and thus its oil is obtained, which, when added to the cream, whipped in and frozen, gives the article its rare and lovely tint. Of course it takes a deal of time and much labor to do all this, and it has to be done carefully and well, but the work is performed by trained, conscientious men. Many thousands of lemons are also used in this factory in the course of a season in the manufacture of lemon syrup. No part of the fruit is discarded save the seeds. Even the rind is preserved, and after all the juice has been squeezed from the pulp the skin is grated and made to yield that pungent essential oil for which the lemon rind is noted. As in the case of the vanilla bean, this product is carefully mixed with sugar and then boiled and strained. When the work is done the syrup is richness itself. Through various passage-ways and around many sharp corners the party proceeded, until it reached the long ice storage room. For a considerable distance this extended under the sidewalk, and it was crammed to its roof of glass, iron, and flagstones with cakes of ice. It is almost impossible to conceive how cold it was amid those glistening cubes, consequently the explorers did not remain there long. At the entrance of the vast vault a halt was made to view the action of the powerful ice-crusher. Into the capacious maw of that voracious machine a big, broad-chested, sinewy man was sliding blocks of ice with the aid of a pair of tongs. With a crash they fell against teeth of steel, affixed at regular intervals to a swiftly whirling steel cylinder. Crunch! crunch! went the teeth as they tore the ice to pieces. Patter! patter! went the fragments as they dropped in an unceasing silvery shower on the floor below. Each particle had passed through a steel comb in the machine before emerging, and was so graduated that it was but little larger than a peach. One hundred thousand pounds of ice are fed to that crusher every day, yet it is always hungry for more, and the feeder is always tired when his day's work is done, and so is the man who shovels away the pieces. Beyond the gleaming heaps under the ice-crusher were other nooks and corridors. In a roomy alcove reached by a somewhat circuitous route rose tier upon tier of empty tubs. Each one had been scraped, washed and scalded until it was a symbol of sweetness and was only waiting to do duty in its turn. Further on was another recess in which were myriad cans of cream with that day's aroma of the dairy still clinging them, while behind and on their right and left flanks were

casks of pure fruit juices, all the result of infinite labor. Scarcely less interesting and instructive were the salt vaults of mammoth size, filled to the brim with salt from the Retsof mines in this State. Other varieties are sometimes employed among which are the Lisbon, Cadiz, Onondaga and Syracuse brands, but the Retsof goes further, eats away the ice more quickly, and so achieves desired results in a briefer space of time. At a distance the heaps of salt rising above the vault look not unlike miniature mountains of dirty white sand, but upon closer inspection the irregular formed rock crystals are plainly visible. These are stained and made dingy by percolations from the soil beneath which the mineral is found, but the dirty salt is just as effective for the purpose for which it is adapted as it would be if snowy white. The vaults are never permitted to become empty. Damp days to the ice cream maker are days of sadness and dulness; wet days make him miserable and wretched; but when it rains his spirits sink to an indescriable depth. But, notwithstanding the fact that less ice cream is sold on such days, the cream remaining in stock requires as much attention as a teething infant. Each can has to be tucked away in a wooden bed, and made nice and cold with thick coverlids of salt and broken ice, otherwise they would soon become unsalable. Then these iron and zinc clad charges demand the unremitting attention of one man, and he attends to his task with the fidelity of a mother, although he does it with a scoop shovel. Usually, however, all ice cream made in the morning is sold in the afternoon of the same day, and that turned out in the afternoon is disposed of by the following morning. None is manufactured in the expectation of future emergencies. If a big order is received so much the better, and everybody toils with increased zest until the order has been filled. Those big order days, like roasting hot days, when humanity above ground is half grilled and frizzled, are days of joy, smiles and dollars to the ice cream man. Repassing through the packing room and its crowd of white-robed workmen, where the temperature of the place is not far above the freezing point, the engine room was disclosed. Everything looked bright and neat but, phew! how hot it was there! It was certainly 90 degs., and in the shade at that. Next came the reflection of a burst of flame, seemingly from an abyss. In the sub-cellar, reached by a steep flight of stairs, was seen a man working like a demon at the mouth of a blazing furnace, which he was feeding with coal. Stifling heat waves were wafted upward. Yet while the visitors hurried away, the demon fireman worked on, bathed in a ruddy light. Again at the mouth of the cavern the blighting breath of July was felt upon the cheek, and once fairly outside the reaction came, and perspiration, long pent up, began to ooze from every pore. That hour's trip in that icy realm was one to be remembered. Statistics show that, as a local commercial industry, ice cream making is from year to year assuming greater proportions, and now gives employment to 1,500 men and women. At least 150 bushels of rock salt and as many tons of ice are used every day by the larger firms, yet the business was only inaugurated in this country in 1851, at which time two small firms made and sold from 50 to 100 quarts of this frigid luxury in a day. Now there are perhaps twenty large firms and an almost endless number of small concerns engaged in this occupation in and around Manhattan Island, to say nothing of the thousands of households in which the ice cream freezer is an article of furniture. Unprincipled dealers resort to many artifices to avoid the expense attendant upon the purchase of pure cream. Some of these employ boiled milk into which is stirred the yolks of eggs, while others make corn starch and milk answer their purposes. Sometimes, not content with these studied deceptions, they not only refrain from using fruit juices or even fruit extracts in flavoring, but introduce harmful chemicals and dyes. Of the latter, aniline is a deleterious and common favorite. Ice cream is of Italian origin, but it remained for a Frenchman, and he the chef of the late Joseph Bonaparte, to introduce it into this country, and he did so in the family of his employer on his estate at Bordentown, N.J. That was in 1848, and from that small beginning the present stupendous business has grown.

TREES AND MOISTURE.

THE FOREST IN THE ECONOMY OF NATURE.

It is a strange fascination that draws man to the forest; a glorious sensation that steals over him as he stands in its cool leafy shade, through which the sunlight peers only coyly, gilding in spots the stately stems. How powerful a charm is exercised by the forest over those capable of appreciating the beauties of nature, can only be measured by the depression, and longing, and sense of desolation which fills them in a treeless region. From the dawn of history until now, man has everywhere signalized his settlement by a purposeless onslaught on the forest with axe and brand, until there was nothing left to destroy. Granted that in thickly populated countries the first need of existence is the spread of agriculture; that there is no place for forests in the fruitful plains and rich valleys, and that the path of progress is hewn by the pioneer who with his axe prepares the way for the plough; there is nevertheless a need for the forest in the economy of nature, and a place for it in the most densely peopled countries. Excepting only in naturally moist countries like Holland and Denmark, agriculture itself is dependent upon forests for its successful prosecution. Through the ignorance and avarice of man wide regions of once fertile country have been converted into arid wastes by the destruction of the forests. The most terrible forest destruction in modern time has been perpetrated by the Spaniards and the Anglo-Saxon peoples, among which latter we must reckon the people of the United States. Too late, alas! It is only in quite recent time that man has learnt to appreciate the vast importance of forests in the economy of nature. Forest destruction implies not only lack of timber and fuel, but involves other and still more serious consequences by its influence on climatic conditions. Forests are the sources of springs; they regulate the flow of the streams; they temper the suddenness of changes in temperature, and arrest the destructive force of the tornado; they absorb the rainfall in their spongy floor, and by its equable distribution regulate the moisture in the adjacent soil and atmosphere. By these means they exercise an important influence on the health and comfort of humanity, on agriculture, on trade and commerce. With the destruction of the forests the conditions gradually become unfavorable for man and beast, and progress is arrested. It is only in moderately warm and moist climates, such as Great Britain, Denmark, and Holland, that the consequences are less pernicious; but where the tropic sun's rays beat fiercely upon the earth, or in inland regions where no fresh sea breeze wafts its moisture upon the parched vegetation, where the fierce storm speeds with untrammelled fury after the treeless region, there the climate may become rude and inhospitable beyond endurance. In the rainy season, the waters rolling off the parched slopes, overflow the brook and river beds, submerge the valleys with floods, and retreating as rapidly as they rise, the once noble rivers are reduced in summer to shallow streams, with scarcely water enough to drive a mill-wheel or float a canoe. With the disappearance of the forest the fruitfulness of the land vanishes, and the health and well-being of the inhabitants is prejudiced. But in spite of the manifold terrible experiences which man has had in this direction, there is no general practical recognition of the relation of cause and effect, and it is hence ever a duty to insist emphatically on the eminent importance of forests in the economy of nature. In the first place it is a function of all green plants to withdraw carbonic acid from the atmosphere, utilize the carbon for building up their own substance and set free the oxygen. This oxygen is the first necessity of existence of animal life, while carbonic acid in excess of the normal quantity in the atmosphere is fatal to it. Forests take in the carbonic acid which animals are incessantly generating, and it is calculated that the amount thus absorbed would suffice to render the earth uninhabitable in the course of a few centuries if all vegetation were destroyed. Animal and vegetable life are essential to each other's continuance; animals replace the oxygen they breathe with carbonic acid, and vegetation is necessary to restore the equilibrium. In this process forests perform the lion's share of the labor, since area for area they carry a thousand times the material engaged in purification of the atmosphere, that a cultivated crop does. Of equal general, and of still greater local, importance is the function of the forest in the storage of water and feeding of springs. There is no sufficient ground for the conclusion that the existence of forests increases the rainfall, excepting on hill-tops where the passing clouds, impeded in their course, are condensed into rain; but all the rainfall of the region absorbed by the forest floor, instead of flowing directly back by the rivers to the sea, is re-evaporated and condensed locally as dew, and this phenomenon occurring constantly, is equivalent in its effect on vegetation to a considerably enhanced rainfall. Forest-clad hills are the sources of supply of the springs in the plains below, and, by the retention of their moisture, they are no less the source of rivers which, by the economy of the forest, are maintained in perpetual flow.—*Die Natur, May* 30.

VACATION PREPARATIONS.

ESSENTIALS FOR A GIRL'S SUMMER TRUNK.

If you wear a fluffy bang, you want your alcohol lamp. If you wear laced shoes, you want a dozen pair of shoe strings. If you varnish or polish your shoes, you want a new bottle of blacking. If you are inclined to sunburn, you want a pot of strawberry cream or some cold cream. If you are fond of reading, you want your favorite books. If you ever use pins, you want a block of black ones and a paper of white ones. If you are a good girl and mend your clothes, you want some spools of thread, your needles, your thimble and some buttons. If you make yourself sweet with infant powder and a puff, you want a sealed package of powder. If you use bonnet pins to fasten on your hat, you want a dozen of them. If you are inclined to be ill tempered and petulant, you want unlimited patience. If you are inclined to be careless and inconsiderate, you want a large package of energy and friendliness. And if you are lacking in politeness, then you want to remember that surely she who claims to be a Christian must, before everything else, be gentle in her manners. —*Ladies' Home Journal.*

LARGEST BAY.—The largest bay in the world is Hudson Bay, measuring 850 miles north and south by 600 miles wide.

CALIFORNIA FRUIT.—Some of the fruit experts of California call attention to the fact that while the wheat crop of that State did not materially increase from 1880 to 1890, the fruit output increased more than thirty times, and is still rapidly growing.

FENCES AND ELECTRICITY.—A singular complaint comes from the fire insurance companies. It relates to large losses in the farming districts on live stock, due, as reported by the farmers, to lightning in connection with barbed wire fences. Most of the animals killed in this way were near the wire fences at the time, and it is supposed the metal acts as a conductor in a degree sufficient to largely increase the risks. Insurance men believe, however, that many cattle reported as killed by lightning were in reality killed by injuries received in coming into violent contact with the barbed wires.

GERMAN COOKERY.

A GLIMPSE INTO THE NATIONAL DISHES OF THE WORLD.

(*Concluded from page* 230.)

In the present number we conclude our selection of German dishes, dealing mainly with the lighter department of sweets, cakes, and pastry. Among these dishes there is an absence of those violent contrasts and surprising incongruity of ingredients noticed in our introduction to the more substantial dishes of Germany. In the domain of the Torten, the Nudeln, the Kaltschalen, and Kuchen generally, Germany may be said, if a culinary levity for once be permitted, to "take the cake," and that cake, if made by a German, is sure to be a good one. In all departments of cookery the German is not only ingenious, original, but eminently conservative. German cooks adhere to the ancient national German dishes as the German printer adheres to the ancient Gothic character of his types; the one objects to French-made dishes as the other objects to Roman lettering. If the French had not had the start of a century with their *cuisine*, it is odds but that Europe would to this day be eating *Bier Suppe mit Kummel Sauerkraut* from St. Petersburg to Lisbon, instead of *consomme a-la-financiere* and *choux fleur au gratin*.

HARING KARTOFFELN (STEW OF HERRINGS AND POTATOES).—Boil potatoes in their skins, not too soft, peel and slice them, and keep them warm. Cut up an onion and put it in a stewpan with a piece of butter or some very thinly cut fat bacon. When the onion begins to turn yellow, dredge it with flour; add a little water, salt, pepper, two or three tablespoonfuls of vinegar, and a bay leaf. Leave this to simmer. Meanwhile, wash two herrings, take the bones out, cut the fish into small dice, add them to the sauce to simmer a few minutes, then put in the potatoes. Stir all together gently, so that the slices of potato are unbroken. Add a piece of butter and a little to moisten the stew, and serve quite hot.

KARTOFFEL OR SCHUFF NUDELN (POTATO NUDELS).—Boil some potatoes and let them get quite cold before they are used. Grate them on a coarse bread-grater. To a plate of grated potatoes add a quarter as much flour, and make of this mixture a dough with two beaten eggs and a piece of warmed butter. Roll pieces of the paste into *nudeln* the size and shape of a finger, but a little pointed at both ends. Make a piece of butter hot on a flat stew-pan; put in the *nudeln* and shake them occasionally till they begin to color. When done, beat up two eggs with a little milk or cream, pour it among the *nudeln* and shake them up in it. Let them strain and serve.

ZUCKERSCHAFEN (YOUNG PEA PODS).—These are the flat pods before the peas are grown. String them like beans, snap and skin the shells, and put them in a stewpan with a little butter, a little gravy or stock, salt and pepper. Either a small onion, a little mint, or a sprig of thyme may be steamed with them if approved. They must only be moist enough to cook soft, without burning. These are excellent with lamb, veal or spring chicken.

SAUERAMPFER (SORREL).—Pick the leaves from the stems, wash and drain them well, and put them in a saucepan with a piece of butter to stew in their own juice. Make a thick sauce of flour, butter, gravy, or water, and the beaten yolks of two or three eggs; add it to the sorrel. Serve with roast lamb, cutlets, *fricandeaux*, or pancakes.

BAIERISCHES KRAUT (BAVARIAN CABBAGE).—One or two full-grown white cabbages must be washed and stripped of their outer leaves. Quarter them, cut out the stalks, and slice the cabbage across in strips, as thin and fine as possible. Sprinkle among the shreds some salt and a few caraway seeds, and let it stand for an hour. Make two or three ounces of butter hot in a stewpan; put in the cabbage, and let it stand till it is soft and yellow. Then pour in a glass of white wine, and half the quantity of vinegar—there must not be enough of the latter to taste distinctly acid. Cover close, and let it stew slowly till quite soft. Half an hour before serving, dredge in a little flour and stir it well.

SAUERKRAUT—To make this famous national pickle the finest and hardest white cabbages must be chosen; it improves their color to let them lie heaped together in a cool corner for several days before they are used. The cutting is usually done with an instrument called a *kohlhobel* (cabbage plane), but a large knife will do equally well. Throw away the outer leaves of the cabbages, halve and quarter them, and cut out the stalks and outer ribs of the leaves. Begin at the top of the head to cut them across in very narrow strips. Have ready a well-seasoned oak barrel or pickling tub, or an earthen bread-pan would do. Cover the bottom of the vessel with clean uncut cabbage leaves, and throw in the cabbage as it is cut, sprinkling it well with salt, equally dispersed, as it is thrown in. Some cooks scatter in a few juniper leaves or caraway seeds. As the shred cabbage is put into the tub it should be pressed down hard with a club, When all is packed as close as possible strew a little salt over the top, cover it with a few cabbage leaves, and then with a clean linen cloth. Put on it a wooden lid that will fit inside the vessel, and lay on this a heavy stone. The "kraut stand" must not be put in too cool a place until fermentation has begun; this may be known by small white globules forming on the brine, which ought to appear above the kraut after two or three days. If this is not the case, boil salt and water, let it get cold, and then pour it over, but this must not be a strong brine. A good handful of salt is enough to allow for a large bucket or firkin of cut cabbage; too much prevents fermentation. In a fortnight the cloth on the top must be well washed in cold water and spread over again. At the same time the leaves on the top must be well rinsed or renewed. This washing must be done once every week. In two or three weeks the kraut is sufficiently pickled for use, and will keep good for a year.

SAUERKRAUT.—To cook sauerkraut.—Put a good-sized piece of butter in a saucepan, let it melt, then put in half the sauerkraut intended to be used, from which the brine must be squeezed as it is taken out of the tub, and on it place the meat intended to be cooked with it, either a piece of ham or bacon, soaked and pared, pork, or any kind of sausage. Lay over it the other half of the kraut, pour in a glass of white wine, and add occasionally a little water to moisten; cover close, and let it stew gently until the kraut is soft and yellow. Take out the meat when sufficiently cooked. Dredge in a tablespoonful of flour to give smoothness; let it stew half an hour longer, they lay in the meat again to get thoroughly hot. Stir the kraut occasionally with a wooden spoon, and be careful that it does not burn. It is excellent warmed up again with some other meat the next day, or a day or two after. Indeed it cannot be cooked too much, and requires at first from two and a half to three hours' stewing. Sauerkraut, as an accompaniment to smoked meat, roast pork, sausages, etc., may be cooked as above without the meat; in that case make a flour and butter thickening to stir in half an hour before serving. A finely minced onion is often added in the stewing, and is an improvement.

SCHWEEM KLOSSE (FLOATING KLOSSE).—Six tablespoonfuls of flour and three eggs, well beaten, must be stirred into one-half pint of milk. Put two ounces of butter in a stewpan and let it melt; pour in the batter and stir it constantly till it boils quite thick; then take it from the fire and stir frequently till nearly cold. Mix well with it three more eggs and a little salt, and then spread the mass half an inch thick on a flat dish. When required for table, take up small *Klosse* with a spoon and put them gently into boiling water to cook for five minutes. Take them up with a strainer and put them into the tureen of soup.

SCHMAROLLEN.—Let a pint of new milk boil, stir in one ounce of sugar with flour enough to thicken it, and boil till the mixture ceases to adhere to the sides of the pan. Then turn it out and, when cool, stir in four well-beaten eggs. Have one and a half pints of milk boiling in a stewpan, and, with spoon dipped each time in water, cut klosse out of the mass and simmer them in the milk a few minutes. Put them all in a dish, put two ounces of butter on them, and bake them a pale brown in a quick oven.

APFELSINEN KALTSCHALE (ORANGE KALTSCHALE).—Peel off the yellow rind of six oranges as thin as possible; throw the peels into a half pint of water with plenty of sugar, and when this is dissolved add one half pint of light white wine. Remove the white skin from the oranges and cut them in thin slices. Lay them in a glass dish, one half over the other in a circle, with sugar strewn between and over them. Put a few slices in the centre, and then pour over the syrup, leaving the yellow peel as garnish. Set the dish in a cool place till it is required and serve sponge cake or fancy biscuits with it.

DAMPFNUDELN (STEAMED EGG DUMPLINGS).—Ingredients: One pound of fine flour, three ounces butter, two eggs, one ounce of sugar, one quarter pint of good milk and cream, one ounce of dry yeast, or a small cup of fresh yeast, and a little salt. The milk must be lukewarm and well mixed with the yeast; then add the sugar, the eggs well beaten, and the butter, which must be warmed. Mix in the flour and beat the whole till it is light and spongy; cover it with a cloth and let it rise by gentle warmth. Turn out the dough on a well-floured pasteboard; cut off egg-sized pieces and lightly roll them into round balls or ovals; leave these on the pasteboard to rise again. Put two ounces of butter in a broad flat stewpan, with a dessert spoonful of sugar and milk half an inch deep. Let this boil; take up the cakes gently with a slice and lay them close together in the boiling milk. Cover with the lid of the stewpan and put them in the oven till the milk is nearly dried away, and they have a nice yellow crust. Take them carefully apart, serve with any sweet sauce, fruit or syrup. It is better to bake them over a stove, or with live coals on the lid of a stewpan, instead of putting them in the oven.

NEUN-LOTH PUDDING (A CELEBRATED RHENISH PUDDING).—Stir half a pint of milk into four and a half ounces of fine flour, and four and a half ounces of powdered loaf sugar. Put into a stewpan four and a half ounces of powdered loaf sugar. Put into a stewpan four and a half ounces of butter and half a pint of milk, and when this is hot and the butter melted, stir in the mixture of milk and flour and keep it well stirred over the fire till it boils and thickens; then turn it out in a pan to cool. Stir in the yolks of nine eggs, four and a half ounces of almonds blanched and pounded, and lastly, the nine egg-whites whisked to a stiff froth. Stir all briskly together, butter a mould or basin, fill it with the mixture, and boil the pudding an hour and a half. Be careful that the water does not cease boiling. Serve white wine sauce with the pudding.

MARZIPAN (MARCHPANE.)—Blanch and pound together one pound of sweet and one ounce of bitter almonds, adding now and then a few drops of orange-flower or rose-water to keep them from oiling. They must be pounded quite fine. Put the almond paste into a stewpan with one pound of powdered sugar, and stir it over a slow fire till it forms a smooth paste that will receive the impression of a finger without sticking to it. Then turn it on a pasteboard well strewn with sifted sugar; mould it into an oval form, and let it cool for use. It may be rolled out thin, cut into stars, rings or round cakes or, any little fancy shapes. Put them in the oven to bake slowly a pale yellow. Or, roll out the paste as thin as possible; cut it into pieces of equal size, or cut out round cakes. Lay over one another with a layer of preserve between, and brush it over with white of egg. Stamp out little

ornamental devices or thin rings, and lay them on the large cake; then brush them over with white of egg glazing. Put it in a slow oven to color a delicate yellow.

LINZEN TORTE.—One half pound of sweet almonds, blanched and pounded, one half pound of sifted sugar, one half pound of butter, three well beaten eggs, and three-quarter pounds of flour must be mixed lightly in the manner of tart paste, rolled out to the thickness of the third of an inch and spread on a flat-buttered tin. Spread over this a thick layer of apricot or other preserve, and over it put either a thin cover of the paste or narrow strips of it to form a network, then lay a thin border of paste round the edge and notch it. Brush the *torte* over with egg, dredge it with sugar, and bake it a pale color in a moderate oven.

CHEAP CANDY.

SOME POINTS REGARDING THE QUALITY OF CANDY.

"Never expect to get any kind of pure candy for less than 40 cents a pound." It was my friend the foreman of a big candy manufactory who spoke, says a writer in the New York *Herald*. "The nuts, the flavoring and the labor on all bon bons and fancy candies, make the actual cost to the manufacturer at least 30 or 35 cents a pound. Don't think that we are in the business for love, and that you can get good candy for 20 cents a pound. We are not selling gold dollars for 50 cents." "What is the purest candy made—the least harmful for children to eat?" "It makes no difference, all fine candy is equally pure. By pure candy I mean that made of the best refined sugar, fresh fruit flavorings, vegetable coloring and fresh eggs. All that costs. Pistachio nuts alone now cost ninety cents a pound and pure black chocolate thirty to forty cents. So you can see why candy to be good must cost at least forty cents a pound. There are imitations of all these ingredients on the market, and they are used extensively by the cheap candy houses. They are put together so cleverly, too, as frequently to deceive the most sensitive palate. But they can't deceive the stomach." "Marsh mallows are as little injurious as any candy, are they not?" "Oh, no, half the marsh mallows are frauds. The real marsh mallows are made simply of the whites of eggs, sugar and gum arabic. A compound which we call 'lily squash' is used to imitate this with. It is made up mainly of glue and flour. The glue is very indigestible and, of course, these fake marsh mallows are very bad things to eat. Equally, of course, they are cheap. Nearly every mother seems to think that if they give their children marsh mallows it's not like giving them candy; that they are harmless. That's all nonsense. If candy is at all injurious to children, marsh mallows are just as harmful as any other bon bon."

ANGEL FOOD.

AN ENGLISH WRITER DESCRIBES ITS COMPOSITION.

From the *British Baker* is taken the following opinion on the "angel food" industry: "In spite of all that has been said to the contrary, these cakes are an undoubted importation from America, where a few years ago they were in very great demand, but of late years their sale has very much fallen off, and they will, no doubt, at no very distant date die a natural death. At their best they are somewhat dry and insipid, and being very troublesome to make, their sale has not been in any way pushed." The writer proceeds to say that it is the most particular cake in the world to make; the whick and the pan must be entirely free from grease. He then gives the following recipe from a Montreal baker: "One quart whites of eggs, two pounds pulverized sugar, one pound flour, two ounces cream of tartar. Sift the flour and cream of tartar well together two or three times through a flour sieve, beat up the whites in a clean towel with a wire egg-whisk, the same as for meringues, till they will bear up an egg, then add a spoonful of vanilla extract, and mix the sugar in with the whisk. Then stir the flour gently in with your hand, divide into cakes, and put into pans of suitable size, and bake in an oven that is not too hot, but, if anything, rather colder than for ordinary large cakes; and when they come from the oven do not take them from the tins or pan, but turn them upside down upon a wire, and stand them in the rack where the air will get at them. Prepare the tins exactly the same as for sponge-cakes. The cakes require very careful baking; they will take from twenty to thirty-five minutes, according to size."

DOMESTIC DIETETICS.

SPECIALLY PREPARED. FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

August.

GAME AND POULTRY.—Pigeon, chicken, duck, woodcock.

MEAT.—Beef, lamb, mutton, ham, kidneys, liver, sausage, veal, venison.

FRUITS.—Cherries, raspberries, huckleberries, melons, gooseberries, blackberries, peaches, pears, tamarinds, bananas, pineapple, grapes, plums.

FISH.—Anchovy, bass, bluefish, blackfish, cod, eels, crabs, clams, flounders, halibut, herrings, lobster, mackerel, mussels, porgie, prawn, salmon, turtle, trout, sturgeon, whiting, weakfish, rockfish.

VEGETABLES.—Beans, beets, cucumbers, cabbage, carrots, cauliflower, corn, egg-plant, lettuce, onions, parsley, parsnips, potatoes, squash, shallots, spinach, turnips, radish, rhubarb, tomatoes.

PRACTICAL RECIPES.

SQUASH SOUP.—Cut a medium sized squash in pieces about two inches square, without removing the rind; steam or bake these half an hour; when cold, rub through a sieve twice. Put into a frying-pan an ounce of butter and a table-spoonful of minced onion; when the onion is a yellow color, add a pint of hot water or stock, season with part of a long red pepper, half a teaspoonful of salt, a leaf or two of celery, three cloves, and a very small bit of mace. Simmer twenty minutes and strain. Wet a teaspoonful of flour with a little cold water, and when free from lumps add to the strained liquid. Simmer until smooth, and add to it a quart of solid squash pulp. Put on the range two quarts of hot water or soft stock. When warm, whisk the squash into it. Scald a pint of rich cream and beat it into the soup. Season to taste, and serve with bits of toasted bread.

TONGUE JELLY.—Take a pickled tongue, boil and peel it, and when cold slice it very thin. Take two cupfuls of the water the tongue was boiled in, a cup of brown gravy or good rich stock, two good table-spoonfuls of vinegar, and a box of gelatine soaked for two hours in just enough water to cover it. Put these together; add two cupfuls boiling water; mix well and strain; season. Let it cool, then fill a mould with alternate layers of jelly and tongue, and set on the ice to stiffen.

ORANGE MARMALADE.—Take for this bitter or Seville oranges; soak them for fifteen minutes in just enough boiling water to cover them. Quarter them, and remove the pulp with the fingers. Put it in a separate dish, cut the rind in thin strips with a sharp knife, and put it in a preserving kettle; pour over it sufficient cold water, and allow it to boil until tender. Drain it through some coarse netting. Cook the pulp for fifteen minutes, and strain through the netting, which will clear it of all skin, seeds, and pith. Put the pulp and rind together and weigh them. Add sugar, a pound for every pound of orange. Return the mass to the fire and boil, stirring smartly. Try from time to time to see if it jellies. When it does, it is done.

ANCHOVY TOAST WITH POACHED EGG.—Cut slices of home-made loaf bread a quarter of an inch thick, trim them neatly and toast them in the oven; when slightly colored, spread a thin coating of anchovy paste or essence on the slices, add a poached egg to each and serve.

MILK CHOCOLATE.—Melt six ounces chocolate, add one quart milk and sugar to sweeten, beat up the yolks of five eggs with a cup of cold milk. Stir the chocolate until it is scalding hot, then pour it upon the eggs. Flavor it with vanilla and beat very fast until it froths, then serve at once.

CHOCOLATE PIE.—Make a four egg cup cake and bake it in a pan, a little deeper than an ordinary layer cake tin. When done, split it with a coarse thread and put between the layers the following mixture: one cupful sugar, yolks of two eggs, one square chocolate, two large table-spoonfuls boiling milk, scrape the chocolate, mix it with the sugar and add, gradually, the milk, then the eggs, simmer for a moment or two, stirring carefully, add some vanilla and take form the fire, eat cold.

PUDDING SAUCE.—Beat up the yolks of six eggs, add to them four table-spoonfuls sugar and four of butter mixed together. Have a pint of cream boiling, add to it your eggs, then put on the fire and stir until well mixed together. Add a wineglassful of brandy and a little nutmeg.

LIFE'S ROMANCE.

THE STORY OF A DIAMOND RING.

Twenty-three years ago last February, as a Newark, N. J., jeweler was about to close his store one stormy night, a shabby young man entered and offered to sell him a gold ring containing a diamond stone surrounded by a circle of smaller gems. He asked $150 for the ring, saying it was all he had in the world. The man declared he must dispose of it that night, but his anxiety made the jeweler more fearful, and at last he firmly refused to have anything further to do with the matter until the next day. On the morrow the visitor came again. The merchant bought the ring. He reset the stone in a lady's ring, and a month later it was carried away by a happy lover, and it sparkled on the hand of a blushing bride in high life soon after. Ten years later the same jeweler paid a half-starved, shivering woman exactly what her lover had paid for the ring a week before her marriage, and as she led away her golden-haired girl she felt that she was rich with what she would have thrown aside a cadeau before. The next purchaser was a portly old gentleman, who gave the stone to his young wife, whom he had taken from her school-books to assume the management of a grand old mansion. It was just two years ago that the old gentleman, still hale and hearty, entered the jeweler's store, leading by the hand a bright-eyed little fellow, whom he introduced as his son and heir. Then he stated the object of his visit. He said the ring reminded him too much and too plainly of the fair young mother who never saw the face of her baby boy.

OZONIZED BRANDY.—It has long been a disputed point whether science possesses any absolutely certain method of aiding nature in the development of ethers and bouquet in spirits; in other words whether it is necessary for a long time to elapse before brandy, whiskey, rum, etc., can be rendered fit for consumption by the action of age. M. Teilliard, of Jarnac, near Cognac, appears to have solved the problem of rapidly maturing brandy by treating it with ozone. In France, England, Russia, Sweden, Switzerland, and other countries, competent authorities have declared in favor of ozonized brandies.

DÆDALUS IN SCIENCE.

ELECTRICITY IN THE PLACE OF WINGS.

A belief is current that we shall fly some day by means of electricity, although no definite method of employing this great agent has been devised. There are two methods suggested for the application of electricity to flying. One is a modification of the so-called telpherage system, which has been tried in England and Wales for the purpose of transporting small packages on a kind of aerial railway. An electric motor runs on a species of elevated railway at a great speed, and, since the railway can be practically an air-line, deep cuttings, tunnelings, and sharp curves can be avoided. It is but a step from this method of aerial locomotion to that of a system which proposes to employ air ships. Suppose, for instance, that a suitable balloon should be provided with an electric motor properly fitted with screws, vanes, and rudder, and that a powerful electric current should be led to this motor by means of trolley wires which slip, or the ends of which run along elevated wires such as are now used in certain double trolley electric railroads. Such an air ship would have certain advantages over the electric railway on the ground. It would have the advantage of the steamship—free to go through a wide stretch of air, unhampered by conditions of stability of roadway, or limitations of curves and gradients. It is true that it would have head winds to contend with. This obstacle the steamship has also to encounter on water. To the believer in the possibility of flying, however, this method seems humiliating. It is not flying; it is telpherage. The aeronaut wishes to cut loose from the earth entirely, and to compete with the birds in an element which has been theirs for countless ages. The method which is thought to be the coming one, is that based upon the employment of storage batteries. A light storage battery, capable of containing at least one horse-power, is to turn an electric motor in a suitable air ship, and by the means of a light motor the problem is to be solved. It is generally conceded, however, that if we are to fly by electricity, we must first be shot off some suitable height to attain the requisite initial velocity. Great hopes were excited when the Faure storage cell was invented. Here was something which the world had long been waiting for, and many prophesied that it would revolutionize methods of locomotion. Unfortunately these hopes have not been realized. The weight of the average commercial lead storage battery is about 100 pounds per horse-power per hour. If one wishes to run a motor for six hours, the battery should be charged for ten or twelve hours; and, under the most favorable conditions, 80 per cent. of the current which is used to charge the battery can be recovered by its performance. In a certain limited sense, the lead storage battery is a success, but its weight is a serious practical difficulty. A new cell was invented two or three years ago by Desmazures of, approximately, only half the weight of the lead cell, and the Americans Waddell and Entz have modified it in certain slight but important particulars, producing a remarkably efficient accumulator. The saving in weight of the battery over the lead storage battery is about 1,500 pounds per car. But although the weight of the storage battery has now been reduced one-half, it is still very great. It is not probable that the future bicyclist of the air can support himself and progress with less than one horse-power at his command. With 100 pounds in his battery and 100 pounds in his motor added to the weight of gear, wings, and rudder, the electrical aeronaut would be heavily handicapped even for a short trip. Even if a lighter storage battery should be invented, the weight of the electric motor is still very great. What invention may accomplish in the way of lightening it, no one can predict. At present, electrical motors are too heavy to be seriously considered for the propelling agents of flying machines which are not in part balloons. It is the belief of many who have studied the subject, that telpherage is the only method by means of which man will rise superior to certain mundane limitations; we, therefore, return to the consideration of a balloon ship driven by an electric motor which is driven by a current fed to the motor, by a trolley wire. This method of flying, although ignominious to one who desires to cut himself entirely free from all connection with the earth, still seems to be a possible solution of the endeavor to use the air as steamships now use the water. The new method of step-up and step-down converters would admit of comparatively fine wire being used to convey the electrical current from the wires on the earth through the trolleys to the balloon ship. With flying machines, the problem of "stepping down" safely still puzzles the aeronaut whether he proposes to employ electricity, or some other source of power.—*The Chautauquan.*

THE TEST OF TIME.

"What's one man's meat is another man's poison," is a truth which is demonstrated by the history of medicine. Every day some preparation is put on the market whose only recommendation is that it has cured one, two or three people of some serious ailment. It is widely advertised, people buy it from curiosity, its sales grow immense, and for a brief period it is prosperous. Then, as the public discover it to have little or no curative power, its popularity declines and its sales diminish, until its owners begin to lose money and close its manufacture forever. Few indeed of the medical discoveries of the century have stood the test of time. Among those which have may be mentioned the compound iodies, the hypophosphites, and, above all, Ayer's Sarsaparilla. Strange to say, in none of these cases did the original inventor perceive the full magnitude of his achievement. Dr. Ayer, in 1840, in experimenting upon all possible combinations of valuable alteratives and beneficial herbs, had in view the expulsion of all humors of the system, and the rejuvenation or strengthening of the vital organs. At that time, the medical schools were far less scientific than they are now, and taught that such ailments as bronchitis, pneumonia, rheumatism, gout, neuralgia, jaundice and summer rashes were local, and that local treatment was the only thing to be taken into consideration. It was, therefore, with profound surprise that both the public and the faculty saw that Ayer's Sarsaparilla cured all these ills, often, in fact, when everything else failed.

When Dr. Ayer first published the formula of his famous preparation, so that it became the property of mankind, the mystery was not lessened in the least. Only as medical science progressed, and it was discovered that nearly all disease is constitutional rather than local, and that all treatment must be applied accordingly, did the secret of the success of Ayer's remedy become known. Thus in the case of boils, which seem purely local, there must be local applications to allay the inflammation and to diminish the pain, while on the other hand there must be a constitutional treatment of the Sarsaparilla and some aperient to cleanse the system and to tone up or stimulate the vital functions. Without the latter the boils continue to appear until the vitality is lowered to so great a degree as to cause the body to suffer until all the impurities are purged away. With the latter, those boils which have reached the suppurating stage go through their development to the end, the half formed ones are slowly absorbed and the incipient ones disappear immediately. To-day when the nature of all disease is becoming so well known as to be a household word, it is found that Ayer's Sarsaparilla is the great general remedy for every ill and disorder whose origin lies in an impure state of the blood, or a lethargic condition of the system. Time has tested the preparation, and pronounced it the best and most efficient weapon against disease possessed by either the practitioner or his suffering patient.

BUSINESS NOTES.

THE RIVAL WORCESTERS.

The conspicuous success achieved by Messrs. Lea & Perrins as producers of the original Worcestershire Sauce has borne the usual fruit, and called into existence clamorous competitors, who are just now making a dead set at the American market where Lea & Perrins' incomparable appetizer is almost as popular as on this side of the Herring Pond. It will be judicious, however, for American hotel-keepers and caterers to accept with the proverbial grain of salt the statements of those who claim for sauces that are comparatively little known on English tables transcendent merits and universal acceptance amongst British epicures. It is of course open for any trader to say that his sauce or soap is "absolutely the best value in the world." The wise consumer appraises such puffery at its real value, makes a comparative test, and settles the question for himself. Certainly, so far as Worcestershire Sauce goes, it is a case of Lea & Perrins' first, and the rest nowhere.—*The Caterer and Hotel Proprietors' Gazette.*

PROFITABLE FRUIT.—Annual profits, ranging from $6,000 to $8,000, are reported in California this season from single groves of oranges and lemons. In one instance the gross receipts were $14,000.

BLASTING BY ELECTRICITY.—A method of blasting by electricity has been tried in Sweden with good results. The means consist of a voltaic arc produced between two carbon rods placed parallel. When the arc is moved close to the spot to be blasted, an intense local heat is created, resulting in expansion that splits the rock.

WHAT CAUSES THE LIGHT.—Prof. Elihu Thomson corrects the popular impression that the luminosity of arc-lamps is due to heated carbon particles. He says that, although there is a steady stream of carbon vapor between the carbons, the light is nearly all derived from the enormously heated surfaces from which the evaporation takes place.

RAPID FIRING.—Dr. Gatling, the inventor of the famous machine-gun, is still engaged in mechanical research. His gun is supposed to have given origin to the destructive French mitrailleuse. From a a capacity of 300 shots per minute, the Gatling gun, as perfected, has now a capacity of 1,200 shots per minute, worked by man power. Recent experiments in the United States Navy developed the fact that there is no limit to its capacity except that of endurance of the parts.

SEEING SALAD GROW.—In Berlin it is said that a new experiment has been tried of serving a dinner party with salad grown before the guests. The following is the recipe tried—it is said successfully—before the Prince and Princess Blucher: "Take good germinating lettuce seed and soak it in alcohol for about six hours, sow it into an equal mixture of rich soil and unslacked lime, and place it on the table. After the soup, water it with lukewarm water, whereupon it commences to sprout immediately."

A RUSSIAN MALADY.—According to the report made by Prof. Tessier, of the medical faculty of Lyons, who was sent in his professional capacity to Russia, for the purpose of taking evidence in regard to the course of influenza there and the various conditions of its evolution, influenza is a normal growth of Russian soil, and when not a raging malady is a smouldering one. Among the contributory circumstances and influences in this line, as enumerated by Dr. Tessier, are the way the people live in winter, locked up in heated houses,—the flatness of the soil, its consequent bad drainage, and universally sodden condition when the April thaw begins—the filthiness of the farmyards, the village streets, and the rivers, which become suddenly swollen, and on falling leave a putrid mud, behind, etc. the microbe of the disease being, in fact, found in this mud, the name given to it being strepto bacillus. A peculiarity mentioned as characterizing this disease is its alliance with this bacillus of pneumococcus, which also lives and thrives in Russian marshes, river mud and village pools.

BIRCH OIL.—Birch oil in a pure state is much heavier than water. Thirteen fluid ounces weigh a pound, and instead of rising to the top of water, it settles to the bottom of it, where, in its action when moved, it resembles quicksilver.—*The Engineer, New York City.*

IRON RUST.—Iron rusts readily in all locations when alternately cold and hot, but particularly when covered with a material which prevents the moisture from escaping freely.

HOPE IT WON'T.—Professor Mayer calculated that, if the motion of the earth were suddenly arrested, the temperature produced would be sufficient to melt and even to volatilize it; while, if it fell into the sun, as much heat would be produced as results from the combustion of 5,000 spheres of carbon the size of our globe.

NEW PRODUCT.—It is stated that an Austrian chemist, Herr Eckstein, has discovered a substitute for celluloid, named hyaline, that is not inflammable It is grainless, odorless, transparent, tenacious, and may be drawn into threads or rolled into films. It is described as composed of colophene, lac, copal, Dammara resin, essential oil of turpentine and gun cotton.

ORIGINAL. No. 43.

Pot Pie Dumplings

BY MRS. DEARBORN,
Principal Boston Cooking School.

Mix and sift together 1 pint pastry flour, 1 heaping tea sp. Cleveland's Baking Powder and ½ tea sp. salt. Beat 1 egg until thick and light, add ½ cup cold water, stir this into the dry mixture, and enough more water to make a dough stiff enough to hold its shape when dropped from the spoon.

Drop the dumplings on a plate a little distance apart and cook in a closely covered steamer for fifteen minutes; or, drop them on top of the boiling stew and cook for the same length of time.

The secret of having them light and tender lies in their not being disturbed while cooking, and in not having much liquid around them, if cooked on top of the stew.—(Copyright, 1891, by Cleveland Baking Powder Co.)

Use only Cleveland's baking powder, the proportions are made for that.



Cleveland's Baking Powder,
Wholesome,
Leavens Most,
Leavens Best.
Try a can,
Cleveland's.

Fine Table Wines

From our Celebrated Orleans Vineyard.

Arpad Haraszthy & Co.

Producers of the

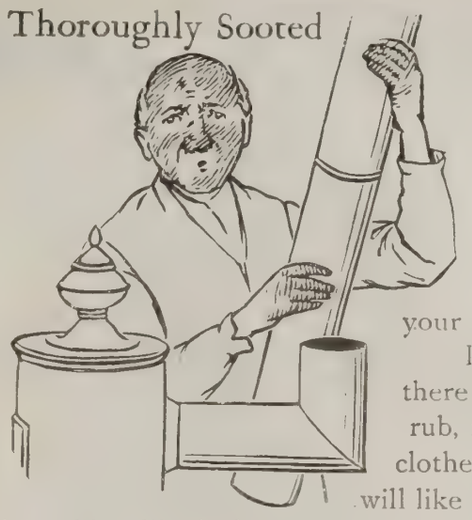
ECLIPSE CHAMPAGNE,

530 Washington St. SAN FRANCISCO.

GENERAL AGENCIES:

NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOSEPH R. PEEBLES' SONS CO., 73 West Fourth Street.
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.

Thoroughly Soaked



The Woman who has once tried *Pearline* is suited. It suits millions of women who are using it; and millions more are following suit.

It washes easily, to save your clothes and your strength; it cleans thoroughly, to save your time and your temper.

Do you know that with *Pearline* there is little or no rubbing? It is the rub, rub, rubbing that wears out your clothes and wears off your paint. You will like *Pearline*, because it is sure; there is nothing like it, because it is safe.

Beware Peddlers and some unscrupulous grocers will tell you, "this is as good as" or "the same as Pearline." IT'S FALSE—Pearline is never peddled, and if your grocer sends you something in place of Pearline, do the honest thing—*send it back.* 239 JAMES PYLE, New York.

GREAT INCREASE.—The revenue from patent medicines in Great Britain was $210,000, thirty years ago. Within a generation the government revenue from this source has increased five hundred fold, now footing up $100,500,000 annually.

POWERFUL MAGNET.—An electro-magnet for the transport of iron castings has been in use for some time at Pittsburg, and at the exhibition at Frankfort is one capable of lifting a ton.

UNSHAVEN WAITERS.—The Paris waiters still keep up their agitation for liberty to cultivate a beard and a moustache. Several noted restaurant keepers, have declared themselves on the side with the men.

VALUABLE DEVICE.—One of the recent inventions for life-saving apparatus is the pneumatic gun for throwing a line to a ship in distress or to persons in a burning house. The air is admitted from a reservoir to the chamber behind the projectile at a pressure of 2,000 pounds on the square inch.

BLACK BRASS.—Brass may be colored black by repeatedly coating the cleansed metal with a moderately worm solution of nitrate of copper. Heating over a charcoal fire follows. Finally the tone is heightened by rubbing with olive oil.

YANKEES ABROAD.—There are now two thoroughly representative American restaurants in Paris. One is the restaurant Delmonico on the Boulevard des Capucines. This has no connection with the New York Delmonico. At the same time the menu is always an American one, and American gourmets who have dined there say that it is very fairly representative of good American cuisine. The other is the restaurant Marivaux, near the Cafe Anglaise, which is kept by the famous Joseph, the late chef of Mr. Vanderbilt, whose engagement, at the salary of an ambassador, made such a stir in the newspaper world some time ago. It has been this season the fashionable rendezvous of all Americans over there. The general opinion is that it is the best place in Europe for genuine American cuisine. Joseph is specially successful in the preparation of American pastry.

DYNAMITE PROJECTILES.—A recent departure in firing dynamite or other high explosives in a shell and from an ordinary gun, has recently met with great success in Manchester, England. Mr. J. E. Bott is the inventor. Instead of the cumbersome machinery necessary to furnish the compressed air to drive the projectile, Mr. Bott supplies a shell containing highly compressed air in its rear portion. The gun used is a breech-loader smooth-bore. When the shell is entered the action of firing forces a pin inward at the base of the shell, thus tearing a hole in the retaining valve and liberating the compressed air. This drives the shell from the gun with wonderful force. It does not heat the gun, makes scarcely any noise, produces no smoke and has a much greater range than any pneumatic gun yet made, and the absence of fouling enables it to be used continuously.

THUNDER STORMS.—A German periodical gives statistics concerning the frequency of thunder storms in various regions of the world. Java has thunder storms on the average 97 days in the year; Sumatra, 86: Hindostan, 56: Borneo, 54: the Gold Coast, 52: Rio de Janeiro, 51; Italy, 38: West Indies, 36; South Guinea, 32; Buenos Ayres, Canada and Austria, 23; Baden, Wurtemberg, and Hungary, 22; Silesia, Bavaria, and Belgium, 21; Holland, 18: Saxony and Brandenburg, 17; France, Austria, and South Russia, 16: Spain and Portugal, 15; Sweden and Finland, 8; England and the high Swiss mountains, 7; Norway, 4; Cairo, 3. In East Turkestan, as well as in the extreme north, there are almost no thunder storms. The northern limits of the thunder storms are Cape Ogle, northern part of North America, Iceland, Novaja, Semelja, and the coast of the Siberian ice sea.

PORTRAIT OF COLUMBUS.—A Chicago gentleman has purchased in London the portrait of Christopher Columbus, which is generally believed to have been painted by Chevalier Antonio Moro, about the year 1570. It is considered the best likeness of the discoverer in existence, and the price paid for it was over $10,000, on account of the desire of another Chicago millionaire and art collector to possess it. The painting was originally in the possession of Margaret, Queen of the Netherlands, for whom it was painted from two miniatures done for the royal family of Spain. It was this portrait that Washington Irving, after a two years' search in Europe, used in his book as the best likeness of Columbus. The frame is a masterpiece of the carver's and gilder's art. It is surmounted by the coat of arms and quarterings of Columbus.

25 CTS. PISO'S CURE FOR CURES WHERE ALL ELSE FAILS. Best Cough Syrup. Tastes good. Use in time. Sold by druggists. CONSUMPTION 25 CTS.

Armour's

Extract of BEEF.

The best and most economical "Stock" for Soups, Etc.

One pound equals forty-five pounds of prime lean Beef.

Send to us for our book of receipts, showing use of ARMOUR'S EXTRACT in Soups and Sauces.

ARMOUR & CO., Chicago.

WATCHES.

EVERY one wants a watch, and naturally a good watch that keeps accurate time, presents a handsome appearance, and is inexpensive. If such a watch can be found of American manufacture, it is an additional appeal to our patriotism. Just such a watch as this ideal THE ANALYST PUBLISHING COMPANY is enabled to offer as a Premium to its readers. Having some large advertising contracts we have been enabled to procure the movements of the manufacture of the best known American watch factories, namely, the Waltham, Elgin, Hampden and Illinois Watch Companies. These movements are adapted for both ladies' and gentlemen's watches, and are warranted by the makers. These movements have seven jewels, patent lever movement, chronometer balance, patent safety pinion, sunk hard-enameled dial, straight line visible palette, stem winders, hand set; in fact, contain all the latest improvements and can be readily cleaned or repaired by any ordinary good watchmaker. They can be regulated to run as close as any movement.



It is needless to say that to case these movements in solid gold cases would make them too expensive, yet they are cased in what are known as gold filled or stiffened "Ladd" cases, and are warranted to be 14 karat gold, made from two sheets of 14 karat gold overlaying fine composition metal, with regular jointed caps, covers and bezels, and to wear at least five years. They are not plated, nor rolled gold, but actual 14 karat gold cases, thin of course, but stiffened and strengthened by being filled with this fine composition metal. They are finished in the same manner, engine turned and engraved as solid gold watches, and wear and look just the same. No one but an expert can tell them from a solid gold watch. These watches are made both open face and hunting case style, in gentlemen's or ladies' sizes. For gentlemen we recommend plain engine-turned cases; for ladies, a handsomely engraved case.

How to Obtain One of these Watches.

These watches are not to be purchased from us at any price. Send us a club of 25 subscribers to the AMERICAN ANALYST, and $25, the regular subscription price, and one of these watches (your choice of style and size) will be immediately forwarded, post-paid and registered, to your address. You need not wait until you have your 25 subscribers all together, but forward them as you get them and they will be credited to you, and when the number is complete the watch will be sent. A subscription for two or three years will be counted as two or three subscribers.

As these watches are retailed by jewelers at not less than $25, it will be seen that we are offering a real premium with the sole object of increasing our circulation, and that by taking advantage of our offer any one can obtain a good, reliable and handsome watch without cost. As the number of these watches at this price is limited, it is advisable to take steps at once to procure a bargain.

THE ANALYST PUBLISHING CO., 19 PARK PLACE, NEW YORK.

BICYCLES

GIVEN AWAY TO BOYS AND GIRLS!

AN OPPORTUNITY OPEN TO ALL.

The Analyst Publishing Company being desirous of largely increasing their subscription list, will furnish every one with a beautiful Safety Bicycle, ABSOLUTELY FREE, in return for a few hours' canvassing.

To every boy and girl who secures 75 subscribers for the American Analyst at $75, we will give a splendid

$40.00

NONPAREIL

SAFETY BICYCLE.



These bicycles are adapted in size to boys, but are strong enough to carry a man. A boy's bicycle should be a strong one. They are manufactured by the OVERMAN WHEEL CO., the makers of the celebrated VICTOR Bicycle, and have the full guarantee of the makers.

The following is a brief description of the NONPAREIL SAFETY; 26-inch wheels; ball bearing all around, including pedals; solid crescent rims; double tangent spokes; three-fourths inch tires; cranks, three throw, 4¼ to 5¾ inches; guards to both wheels; tool-bag, oiler and wrench. Finished in bright enamel, all exposed metal heavy nickel-plate on copper.

In selecting these machines as a premium, we have disregarded cheapness and selected a Bicycle which is serviceable, and the makers of which have an established reputation for building the best Bicycle that money, machinery and brains can produce. We are actually furnishing the Bicycles and Papers at less than cost, but hope by stimulating active and successful canvassing, and thus enlarging our subscription lists, to make an eventual profit. We positively guarantee these bicycles to be just as here represented. They will be shipped by express f. o. b. in New York.

Subscription orders must be made out plainly and legibly, and sent as fast as secured, addressed to

THE ANALYST PUBLISHING CO., 19 Park Place, New York.

TEAS

REVOLUTION IN PRICES.

Direct from TEA GROWERS to TEA POT.

Finest Teas Imported.

Send in your orders at once. On $20.00 Tea and Baking Powder orders, we will allow you a **Complimentary,** in any kind of Tea you may select, equal to **25** per cent. and **Pay all Express Charges.** This is an unprecedented offer. Remember we are the **"Old Reliable,"** THE GREAT AMERICAN TEA COMPANY Established 1861. No discounts, No Premiums, No Panels.

PRICES OF TEAS & BAKING POWDER.

OOLONG,	30, 35, 40, 50, 60, best 65 cts. per lb.
MIXED,	30, 35, 40, 50, 60, best 65 " "
JAPAN,	35, 40, 50, 60, 70, 80, best 90 " "
ENGLISH BREAKFAST,	35, 40, 50, 60, 70, 80, best 90 " "
YOUNG HYSON,	35, 40, 50, 60, 70, 80, best 90 " "
IMPERIAL,	35, 40, 50, 60, 70, 80, best 90 " "
GUNPOWDER,	50, 60, 70, 80, 90, best 1.00 " "
BASKET FIRED JAPAN,	50, 60, 70, 80, best 90 " "
CONGOU ENGLISH BREAKFAST,	50, 70 best 90 " "
SOUCHONG "	" 50, 70, best 90 " "
FORMOSA OOLONG,	50, best 65 " "
ORANGE PEKOE,	50, best 70 " "
ASSAM,	50, best 70 " "
BAKING POWDER, in One Pound Tin Cans,	45 cts. per can.
BAKING POWDER, in Half-pound Tin Cans,	25 " "

All goods warranted to give perfect satisfaction, or they can be returned and exchanged or money refunded, and all expenses paid by us.

THE GREAT AMERICAN TEA COMPANY,

— IMPORTERS, —

31 & 33 Vesey St., P. O. Box 289. New York.

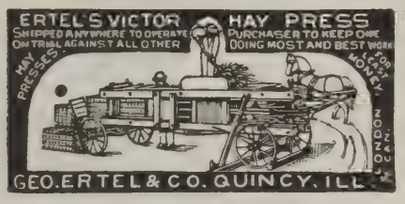
N. B.—Only inducements are *Best Goods* at *Lowest Prices.*

FORTUNE TELLING FISH!!

ALMOST HUMAN in its Movements and Actions.

GREATEST NOVELTY OUT. Gives exact definition of character. Can be carried in vest pocket. **AGENTS COIN MONEY.** Sample sent to any address **10c.,** one dozen **75c.,** three dozen **$1.50,** postpaid.

EUREKA MANUFACTURING CO., Hinsdale, Ill.



DETECTIVE!

WE WANT A MAN IN every **locality** to act as **Private Detective** under our instructions. Send stamp for particulars.

WASHINGTON DETECTIVE AGENCY,
Box 787. Washington, Iowa.



We Can Save You Fifty Dollars When You Build. *

If you are thinking of building a home, here is an opportunity to secure one or several designs of houses which will aid you in deciding just what you want.

PLANS READY TO BUILD FROM

ONLY 25 CTS. EACH

Or Five Sets for One Dollar.

The designs given below to select from are practical and are drawn to a large scale by Geo. O. Garnsey, architect for THE NATIONAL BUILDER. Each one consists of a large, beautifully colored picture of a front elevation, including the floor plans, the details, the specifications, and carefully prepared estimates of cost, and all ready to build from. By a special premium arrangement we are enabled to sell these plans at the above extremely low price. **Specify number of Design.** Send all orders to

THE ANALYST PUBLISHING CO.,

No. 19 PARK PLACE, NEW YORK CITY.

No. 2. **Clover Cottage.** Neat, cosy and modern. Cost, $1,960.
No. 3. **6-Room Elegant Brick Residence.** Suitable for city or country; Handsome Front, Good Basement, etc. Cost, $3,500.
No. 4. **6-Room Modern Residence.** Handsome Front, with broad circular Veranda. Cost, $3,000.
No. 5. **Cheap 5-Room Genteel Cottage:** With Reception Hall, 9x12, and good Basement. Cost, $2,000.
No. 6. **8-Room Residence.** Handsome Front, neat Porch, etc. One of a series of residences much in demand. Cost, $3,000.
No. 10. **Bank and Store Fronts.** Showing different styles of Show Windows, and highly Ornamented Fronts. Two designs. Cost, $1,613 and $1,325.
No. 17. **Double City Flat Building.** Six rooms in each flat; building adapted to narrow lot. Ornamental, Romanesque Front. Cost, $10,000.
No. 19. **Queen Anne Cottage, Eight Rooms.** Good light; exhibiting good effect. Cost, $4,000.
No. 21. **Maplewood Cottage, Three Rooms.** Abundance of piazza. Very neat and convenient. Cost, $1,000.
No. 22. **Hyacinthe Cottage, Three Rooms.** Very odd and pleasing. Cost, $750.
No. 23. **Clovernook Cottage.** New in style. Cost, $750.
No. 25. **Eastlake Cottage, 8 Rooms.** Neat Story Frame. Cost, $1,875.
No. 26. **Castle Stone Cottage, Six Room.** This design is handsome. Cost, $2,575.
No. 38. **Cheap City House, Eight Rooms.** Suited for inside lot; nicely laid out. Cost, $2,600.
No. 40. **Charming Suburban Cottage of Five Rooms.** Very roomy and convenient. Cost, $2,500.
No. 42. **Beautiful 6-Room Cottage.** Handsomely designed; all modern improvements. Cost, $3,100.
No. 49. **Neat Village Church.** Seating capacity about 600. Cost, $7,500.
No. 50. **Store and Office Building.** Brick; 2 stores and 8 offices, very handsome. Cost, $7,000.
No. 51. **Modern Suburban Residence of Nine Rooms.** Beautiful design. Cost, $2,100.
No. 57. **Rosedale Cottage, 3 Rooms.** With Bay Window, Frame. Cost, $1,000.

TABASCO PEPPER SAUCE,

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced by connoisseurs to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY'S SON,

NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

THE

New Model "HALL"



A Perfect Typewriter. Best Manifolder. Terms to Agents Liberal. Portable. Inexpensive. Writes All Languages. *Read Mr. Howell's Opinion.*

"I wish to express my very great satisfaction with the Hall typewriter. Impressions and alignment are both more perfect than any typewriter that I know, and it is simply a pleasure to use it. It is delightfully simple and manageable."

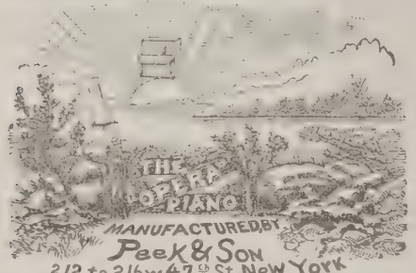
(Signed) W. D. HOWELLS.

Send for Catalogue and Specimens of work.

Address N. TYPEWRITER CO., 10 Temple Pl., BOSTON.

HARTSHORN'S SELF-ACTING SHADE ROLLERS

NOTICE SCRIPT NAME OF Stewart Hartshorn ON LABEL, AND GET THE GENUINE HARTSHORN



A HIGH-GRADE PIANO

AT A VERY MODERATE PRICE.

NEW DESIGNS. FANCY WOODS.

Terms Easy. + Monthly Instalments.

TWO, THREE AND FOUR PEDALS.

Catalogues, Prices, Terms, Etc., sent to any address.

EVERY PIANO WARRANTED 5 YEARS.

(Mention this Paper.)

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,

HOWARD STREET, BOSTON, MASS.

GOLD MEDAL, PARIS, 1878.



W. BAKER & Co.'s Breakfast Cocoa

from which the excess of oil has been removed,

Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

"BILLET"

are

Carefully Selected

French Sardines,

Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS.

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

BROMO SODA.

Useful in Nervous Headache, Sleeplessness, Excessive Study, Over Brainwork, Nervous Debility, Mania, Etc.

DOSE—A heaping teaspoonful in half a glass of water, to be repeated once after an interval of thirty minutes, if necessary. Each teaspoonful contains 30 grs. BROMIDE SODIUM and 1 gr. CAFFEIN.



SUPPLIED BY ALL DRUGGISTS

Ask for (Bromo-Soda, Warner & Co.) and take no other "Bromo."

RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,
184 Greenwich St., N. Y.

HAMMOND'S
CELEBRATED
Calumet Oleomargarine

Strictly pure, cheap and healthful.
Ask your grocer for it.
Put up in packages of all sizes, also prints and rolls.

C. H. HAMMOND CO.,
607 to 615 THE ROOKERY,
CHICAGO.

Also offices at Boston, South Omaha, Neb., and Hammond, Ind.

BLAIR'S PILLS.



Great English Remedy for GOUT, RHEUMATISM and KIDNEY COMPLAINTS.
SURE, PROMPT and EFFECTIVE.
Large Box, 34; Small, 14 Pills.
At all Druggists, and
224 WILLIAM STREET, NEW YORK.

Pure LAGER BEER,
"IMPERIAL" and "CULMBACHER"
Brewed & Bottled
SPECIALLY FOR
HOTELS, CLUBS
AND
PRIVATE FAMILIES
BY
Beadleston & Woerz
291 W. 10th St. New York.
Orders by Postal Card promptly attended to.

SWIFT'S
CHOICE
Chicago Dressed Beef
AND
MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,
UNION STOCK YARDS,
CHICAGO, ILLS.

PUBLICATIONS OF THE
ANALYST PUBLISHING CO.

THE AMERICAN ANALYST.
Weekly. Every Thursday. $1 per year.

THE ROOFER, TINNER AND SHEET-IRON WORKER.
Monthly. 15th each month, $1 per year.

THE LEATHER MANUFACTURER.
Monthly. 1st each month. $3 per year.

Reliable agents and representatives wanted everywhere on liberal terms. Address
ANALYST PUBLISHING CO.
19 PARK PLACE, NEW YORK.



We can save you Fifty Dollars when you Build. See



A complete set of Plans to build from, simply state about price of dwelling desired. 25 cts. in stamps. Our book "Beautiful Homes," 25 cts. Our monthly book "The National Builder," 25 cts. Address
The National Builder, Adams Exp. Bldg., Chicago, Ill.

Subscription $1.00 per year. Now is the time to subscribe.

THE LABORATORY.

To Inventors, Manufacturers and Applicants for Patents

The AMERICAN ANALYST may be consulted upon all matters involving theoretical or applied chemistry. Advice and opinions given. Analyses and assays made. Patents perfected and secured. Terms reasonable.

Address, AMERICAN ANALYST,
19 Park Place, N. Y.

THE ORIGINAL AND GENUINE
(WORCESTERSHIRE SAUCE).



LEA & PERRINS' SAUCE

In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—

Lea & Perrins

Beware of Imitations; see that you get Lea & Perrins'

For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.
JOHN DUNCAN'S SONS. NEW YORK.

DO YOU KNOW THE **DANGER** OF USING SOAP?

IF YOU ARE GOING TO THE COUNTRY, DO NOT FAIL TO READ THE FOLLOWING.

We do not mean soap made from proper material; and when we tell you that about ninety-nine per cent. of Toilet Soap is made from refuse fats gathered from tenement houses, hospitals, butcher shops, and from cattle dying of disease or during transportation, you will, we believe stop and think. Putrefactive changes have taken place in most of this material, as it is mixed with lean meat, blood, bones, sinews, etc. There is at least *one* soap that is made wholly from vegetable material—OLIVE and PALM OILS—and that is

VELVET SKIN SOAP.

It will keep the skin soft and in a healthy condition, as no animal fats are used in its manufacture.

Nothing in one's personal outfit is quite so satisfactory as a thoroughly reliable Toilet Soap.

We are confident that a trial of this article will insure its continued use. If the dealer does not keep it, do not take any other, but require him to order it for you, which he can do readily. **Otherwise, send to us direct.**

MANUFACTURED BY

REED & CARNRICK, Manufacturing Chemists,

447 GREENWICH STREET, NEW YORK.

GLENN'S **SULPHUR SOAP.**

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,

C. N. CRITTENTON,

115 FULTON STREET,

NEW YORK.

Be progressive and keep abreast of the times. Avoid dyspepsia by using **Lard Compound** and **Cottolene,** a substitute for lard.

The highest medical authorities pronounce them healthful; and expert cooks commend them.

Our **Clairette** brand of cotton oil soap is the purest and best laundry soap in the market; as pleasant to the hands as genuine castile.

N. K. FAIRBANK & CO.,

CHICAGO AND ST. LOUIS.

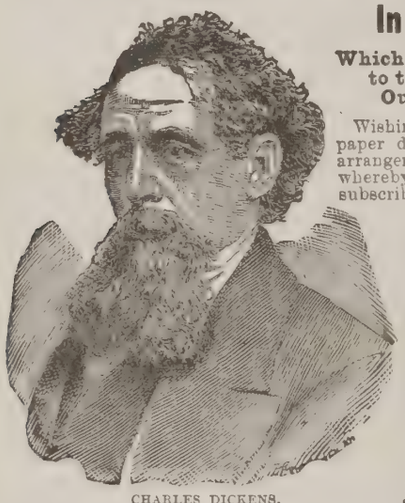
GRAND PREMIUM OFFER!

A SET OF THE

WORKS OF CHARLES DICKENS,

In Twelve Large Volumes,

Which we Offer with a Year's Subscription to this Paper for a Trifle More than Our Regular Subscription Price.



CHARLES DICKENS.

Wishing to largely increase the circulation of this paper during the next six months, we have made arrangements with a New York publishing house whereby we are enabled to offer as a premium to our subscribers a **Set of the Works of Charles Dickens,** in **Twelve Large and Handsome Volumes,** with a year's subscription to this paper, for a trifle more than our regular subscription price. Our great offer to subscribers eclipses any ever heretofore made. Charles Dickens was the greatest novelist who ever lived. No author before or since his time has won the fame that he achieved, and his works are even more popular to-day than during his lifetime. They abound in wit, humor, pathos, masterly delineation of character, vivid descriptions of places and incidents, thrilling and skillfully wrought plots. Each book is intensely interesting. No home should be without a set of these great and remarkable works. Not to have read them is to be far behind the age in which we live. The set of Dickens' works which we offer as a premium to our subscribers is handsomely printed from entirely new plates, with new type. The twelve volumes contain the following world-famous works, each one of which is published *complete, unchanged, and absolutely unabridged:*

DAVID COPPERFIELD,
MARTIN CHUZZLEWIT,
NICHOLAS NICKELBY,
DOMBEY AND SON,
BLEAK HOUSE,
LITTLE DORRIT,
OUR MUTUAL FRIEND,
PICKWICK PAPERS,
BARNABY RUDGE AND CHRISTMAS STORIES,
OLIVER TWIST AND GREAT EXPECTATIONS,
THE OLD CURIOSITY SHOP AND THE UNCOMMERCIAL TRAVELER,
A TALE OF TWO CITIES, HARD TIMES AND THE MYSTERY OF EDWIN DROOD.

The above are without question the most famous novels that were ever written. For a quarter of a century they have been celebrated in every nook and corner of the civilized world. Yet there are thousands of homes in America not yet supplied with a set of Dickens, the usual high cost of the books preventing people in moderate circumstances from enjoying this luxury. But now, owing to the use of modern improved printing, folding and stitching machinery, the extremely low price of white paper, and the great competition in the book trade, we are enabled to offer to our subscribers and readers a set of Dickens' works at a price which all can afford to pay. Every home in the land may now be supplied with a set of the great author's works.

OUR GREAT OFFER

TO SUBSCRIBERS

TO THE

AMERICAN ANALYST.

We will send the **ENTIRE SET OF DICKENS' WORKS,** *in* **TWELVE VOLUMES,** *as here described, all postage prepaid by ourselves, also* **THE AMERICAN ANALYST** *for* **ONE YEAR,** *upon receipt of* **$1.50,** *which is only* **50** *cents more than the regular subscription price of this paper.* Our readers, therefore, practically get a set of Dickens' works in twelve volumes for only **50** cents. This is the grandest premium ever offered. Up to this time a set of Dickens' works has usually been $10.00 or more. Tell all your friends that they can get a set of Dickens' works in twelve volumes, with a year's subscription to **THE AMERICAN ANALYST** for only **$1.50.** Subscribe now and get this great premium. If your subscription has not yet expired, it will make no difference, for it will be extended one year from date of expiration. We will also give a set of Dickens', as above, free and post-paid, to any one sending us a club of three yearly subscribers.

ADDRESS:

THE ANALYST PUBLISHING CO.

No. 19 PARK PLACE,

NEW YORK.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 34. NEW YORK, THURSDAY, AUGUST 20, 1891. WHOLE No. 234

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - $1 per year.
Single Copies, - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.
Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.
Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,

H. LASSING, M. D., } *Editors.*
T. P. McELRATH, }

No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

Applied Science 401
Boys and Bones 402
Buddhism 400
Domestic Dietetics 401
Editorials 397
The Kill or Cure System ; California Phenomena ; Universal Speculations.
Electrical Progress 400
Falling Stars 402
Pond Revelations 399
Rain Compellers 398

THE KILL OR CURE SYSTEM.

It seems a pity that a discovery bidding fair to benefit the world should be prematurely forced into public attention, as was the case with that of Professor Koch, of Berlin. What may be the ultimate outcome of the famous "lymph" it would be vain to predict, though it undoubtedly will result in some marked advancement in the curative treatment of phthisis. But the popular disfavor with which its claims are considered to-day is in marked contrast to the enthusiasm that the mere sounding of its name six months ago excited. The trouble was, the public was let into the secret before the discoverer had fairly begun the experiments that were to determine its value. The same thing has happened before. The best plan is to suspend opinion in the case of new systems of treatment until they have been tested by time and experience. Such, for example, would be the action we should especially recommend in regard to a new method which we find mentioned by the Chicago *Herald*, and which we venture to designate as the "Break-neck Cure." It appears from our contemporary that a cure has been discovered at Reading, Pa., for epilepsy, that seems to be effective, as it can be relied upon either to kill or to cure. An eight-year-old boy who had been afflicted with epilepsy for four years, during one of his paroxysms fell from a third story window to the pavement. His mother rushed out to pick him up dead, but found that he had picked himself up and gone off. He was badly bruised, but was sent to the hospital, where he was treated for his injuries and has recently been dismissed sound in body and mind, and with no symptoms of epilepsy since his fall. The remedy is a heroic one, and the story bears some resemblance to the one related by Charles Reade in one of his stories where reason returns to the hero after an unexpected plunge in the sea. The great difficulty about such remedies is that they must be the result of accident. Throwing one's self in the sea or from a third story window will not serve the purpose. A "happy accident" occasionally does more for a patient than all the disciples of Galen can do. But such accidents cannot be counted on in the materia medica, and have, as a rule, too much danger and responsibility attending them to encourage the friends of a patient in arranging for accidents for him.

CALIFORNIA PHENOMENA.

The remarkable overflowing of the Colorado River into the great Colorado desert in San Diego County, Cal., described in the AMERICAN ANALYST of July 9, has had a stupendous sequel in the shape of a mighty earthquake, accompanied by a tidal wave in the Gulf of California. On July 30 an earthquake is reported to have completely changed the course of the Colorado River, which left its old bed and poured its waters through a crevasse a thousand feet in length. Another effect of the convulsion was the revived activity of the volcanos in that region, which in turn produced a great tidal wave, estimated by the few terrified persons who saw it as having mounted to a height of one hundred feet at the head of the Gulf of California. A newspaper correspondent at Yuma furnishes some interesting details of the occurrence. During the earlier excitement above referred to at Salton Lake, at least one half of the Colorado River, which even at this season of the year is a stream six hundred feet wide and twenty feet deep, made its way into the desert a few miles from Yuma, and eventually flowed north and into the Salton basin. The thirsty desert failed to drink up all the river, and it seemed as though mighty forces came in alliance to wipe this great stream off the map. Early on the morning of July 30 premonitory rumblings gave notice of a coming storm. The earth trembled under foot; then came a mighty crash, as though subterranean artillery by thousands of pieces had been discharged. The people rushed from their houses at the first signal, to be thrown flat on their faces. The adobe houses just vacated went to pieces, the air was filled with clouds of dust, and for a few seconds the day of judgment seemed to reign. The terrified people cautiously rose to their feet and moved about, horrified to find that what before had been solid ground yawned with cracks and crevices apparently without bottom. Hills had slid from their foundations and occupied new stations. The very river itself had disappeared. Where before flowed a shallow, sluggish stream of the color of ochre was now only a channel of mud. This did not, however, remain long, and the river gradually reappeared, but yet in diminished volume. The testimony of a hunting party that witnessed the appalling convulsion of nature near Lerdo, Mexico, gives a thrilling idea of the powerful forces underlying the crust of the earth we inhabit. Of a sudden the sky was darkened, and the waters of the river seemed to be climbing mountain high, as a great tidal wave from the Gulf of California came pushing, crowding, and boiling ahead with its wall of foam and fury. The frightened men, struggling for high ground, could see through the darkness the foam-flecked waters. Corrals, fences, and landing-places were washed away. The shaking of the ground increased, while the horrible crackling, grinding noise of rended rocky hills seemed to increase each moment. To add to the horror of the scene, a terrible thunder-storm arose, and the lightning flashed as it never flashed before in that country. In a little while the storm subsided, the gulf wave receded, and the party started back for Lerdo. But shortly a second shock, much stronger than the first, was experienced. The earth opened in many places, and the tremor threw the men down with much force, rendering them unconscious for some time. When about to resume their journey they found many places from four to seven feet wide and twenty to thirty feet long, and apparently fathomless, which had been opened in the earth by the second shock.

UNIVERSAL SPECULATIONS.

There is a brilliant contributor to the columns of the *Electrical Review* who, through mistaken modesty, perhaps, conceals his identity under the sobriquet of "The Prophet." Who he is we do not know, though his comprehensive mode of thought and daring speculative grasp bring to mind some corresponding characteristics of Nikola Tesla, of whose remarkable lecture on Electricity last May, before the Institute of Electrical Engineers, an abstract, necessarily too short, was published in the AMERICAN ANALYST of August 6. Our readers may remember our reference some months ago to a suggestion of "The Prophet" regarding a telescope in which the usual object glass should be replaced with a specially contrived electric field of large dimensions. The capacity of such an instrument, could it be constructed, would be enormous, and its revelations correspondingly extensive. "The secrets of the other

planets," as the writer declares, "would then be ours." In a subsequent paper the same ingenious scientist reverts to the electric field lens idea to maintain that it need not be restricted to telescopes. "The essential feature of a microscope is the eye-piece"—we presume he meant the "objective"—which, he continues:

"Should be a minute sphere of perfect glass. The grinding and polishing of such a small globule of glass as is required in a high power microscope is the only limiting factor in microscopy. It is conceivable that an electric field could be formed which would be as small as a mathematical point. What could we see with such a microscope? Fitz James O'Brien gives us, in his 'Diamond Lens,' a beautiful poetic vision of what his hero saw with a lens of immense power which he had constructed out of a large diamond and treated with an electric current. While it is not likely that a powerful electric lens would reveal to our astonished gaze visions of prismatic groves and the beautiful 'Animula' with whom O'Brien's hero fell in love and pined away because he could not speak to her, yet the scientific imagination goes on a flight which quite equals that of the poet."

And here the "scientific imagination" takes in fact a leap that condenses in a single short paragraph food for the mind to occupy itself with, to the exclusion of other concerns, for quite a period of time. We are led to infer that if the true poet must be inspired, the true scientist must be a poet. For our "Prophet" concludes his letter in the following words, which we commend to such of our readers as are familiar with John Fiske's "Unseen World." "This at once brings up the query: What is matter? We are told that matter is made up of molecules, and that the distances between molecules are immense compared with their size. If we could conceive of a being small enough to exist on a molecule and he should gaze off into space, the nearest molecules would appear to him at such distances as the stars do to us. The idea of a grain of sand containing worlds of its own is too stupendous even for a poet. Yet who can say that such is not the case. Then, to turn to the other extreme, suppose the earth to be an atom, our solar system and perhaps our universe forming a pebble on the shore of some vast ocean space!"

RAIN COMPELLERS.

DESERT LANDS TO BE REDEEMED BY THE AID OF HIGH EXPLOSIVES.

A Washington correspondent writes to the Philadelphia *Press*: Gen. R. G. Dyrenforth, of this city, who is to have charge of the experiments for the production of rain by artificial methods, leaves here in a day or two for the scene of his experiments. Just what spot will be selected is not yet determined, or if it is the precise locality is kept secret. There is no disposition to deprive the public of any information as to the manner of conducting the experiments, or as to the results, but Gen. Dyrenforth says frankly that he will have so much on his mind, and so much labor and careful calculation and study to be performed in this experiment, that he does not wish to be interrupted by inquirers or investigators during the progress of the work. "I intend that every fact shall be known," he said, "and in the most intelligent and useful form possible, but I want to make the experiments first, and to make them carefully. Then there will be time enough to tell the story of the work and the results, if there are any." "You do not speak in very positive terms as to results?" "Why should I? It is an experiment, pure and simple, one never tried before, and there are no data or even the most unimportant experience to guide us in forming an opinion as to what will be the result. I certainly hope that it may be a success, and the more I study the matter the more strongly I am impressed with the feeling that there may be a good foundation for the theory that concussions produce rain, whether they will do so under the unfavorable conditions which prevail in the regions where this sort of thing is most needed is, of course, quite another question. But so far as I am concerned, I intend that the test shall be as thorough and as intelligently made as possible under the circumstances." The history of this curious and important experiment is known to but few. Some years ago an Illinois engineer, Edward Powers by name, published a little book showing that many of the great battles of the world had been followed by rain, and arguing that it might be practical to produce rain by explosions of powder. He estimated, however, that the experiment would cost from $20,000 to $30,000, and his theory was not taken hold of. Senator Farwell, of Illinois, however, became much interested in the theory, and on talking with other members of Congress who had had war experience, found that they believed in the theory. He also found another supporter from another walk of life, and a very valuable contribution it was to the information on the subject. This supporter was no other than Senator Stanford, who said that his experience in building the Central Pacific road was in direct support of the theory. Much of this road was built through a section of country where rain seldom, if ever, fell; yet, soon after the work began in this rainless region, and the heavy blasting that was necessary to cut the way through the mountains of granite was under way, there were frequent, almost daily, rains, and this condition continued until the blasting ended and the road was built, when the rain ceased. So a clause was added to the appropriation bills in the two sessions of the last Congress, appropriating $9,000 for experiments to be conducted under the direction of the Department of Agriculture. In looking about for somebody to conduct the experiments, Assistant Secretary Willetts found that Gen. Dyrenforth, ex-Patent Commissioner, had given the matter some thought, largely through his acquaintance with Senator Farwell, and he was asked to take charge of the work. The field was an entirely new one. He began the study of the history of battles with reference to rainfalls, then the question of explosives. He soon conceived the idea that if it is concussion that acts upon the air to produce the result, it would be better that the concussion should be in the stratum of air where the rain is to be formed. How to get it there was the question. To send up captive balloons was easy, but to send them up loaded with dynamite or nitro-glycerine, and take the risk of some of them getting away unexploded, was too serious. Besides, the explosion of dynamite or nitro-glycerine produces too quick and sharp a sound. What he wanted was something like thunder, which will shake the atmosphere. He remembered that sharp claps of thunder in the midst of rain are often followed by a great increase in the rainfall. Being himself a graduate of the school of technology, he was perfectly familiar with the fact that a combination of hydrogen and oxygen gases is easily exploded. The happy thought suggested itself to his mind that these gases would be needed to carry up the balloons which were to transport the explosives, and the very article furnishing the motive power might itself be the explosive best fitted for the work. So he experimented, and exploded a few balloons near Washington with the most astounding results. This matter satisfactorily settled, he set about the practical preparations. He hunted up Prof. Carl E. Myers, the distinguished balloonist, at his New York home, and, finding him well posted on the production of hydrogen in quantities, directed him to utilize his experience in balloon construction and hydrogen making in aid of the project. He then devised a machine for the production of oxygen in large quantities in the field, and finding that it worked perfectly, sent forward a car loaded with the necessary material for the experiment, and is now to follow with a party of skilled assistants and begin the experiments. The party will consist of Gen. Dyrenforth as general director of the work; Prof. Myers and G. W. Casler, balloonists; Dr. Rosell, chemist; Paul A. Draper, electrician; George W. Curtis, meteorologist. A place will be selected where there is little if any rainfall at this season of the year, and near to a signal station, so that the benefit of the services and predictions of the observers may be had. The meteorologist and electrician will be provided with the most delicate instruments for testing the electrical conditions of the atmosphere. The experiments will begin in a small way, with the explosion of a single balloon, and observation as to the effect upon the amount of moisture and electricity in the atmosphere immediately surrounding. Experiments will also be made to discover whether the explosion of the balloons would be likely to cause the explosion of the dynamite or other explosives of that character which it is proposed to use simultaneously later on. Captive balloons will be sent up carrying observers to test the quantities of moisture and electricity at various heights of from 1,000 to 7,000 feet above the earth. These will be connected by telephone with the earth, so that observations may be taken simultaneously with delicate instruments at the earth and in the various strata of air at a distance of from 1,000 to 7,000 feet. If it is found that a stratum of air at a mile height has more moisture than near the surface, experiments will be made to see what the effect of explosions there will be, and whether the rain, if produced, will be able to fall through the dry air below it without being absorbed, and if it is so absorbed, whether it can be shaken out of the lower stratum of air that so absorbed it. Observations will meantime be taken both on the earth and in captive balloons as near to those exploded as it is safe for them to approach. When these preliminary experiments are satisfactorily made, the grand experiment will begin. A line of explosives will be placed in about the position that a line of battle is arranged, stretching about three miles in length and a half mile in width. There will be various kind of explosives. On the ground there will be a mortar for firing "rack-a-rock" powder and dynamite, so that the earth may do its part in conveying the sound and motion from the concussion, and that the smoke, which is supposed by some to have some bearing, may also be present. There will be large kites, from six to twelve feet high, which will be sent aloft bearing a bunch of explosives at their tails, and connected by a fine copper wire with a battery. In order to get the required height with these they will be "driven tandem," attaching the end of as much line as the first one will carry to the second kite and sending both on up, attaching the second to the third, and so on. This plan will also be pursued where necessary in getting balloons with wires attached to the necessary height. The mortars planted and the kites in air, the balloons will be sent up, at a distance say of 1,000 feet apart, and the racket will begin. It is the intention to keep up this din to the god of rain for two or three days, or perhaps longer, noting the atmospheric changes, both on earth or in the air at various heights, constantly as the "battle" goes on. These observations will be taken, and officially and scientifically noted, both as to atmospheric and electrical conditions. There is enough of the sound-producing material to hold about three of these "battles." The party will take 100 balloons, from 10 to 20 feet in diameter, and capable of holding from 500 to 5,000 cubic feet of gas; hundreds of kites, from 6 to 12 feet high; miles of copper wire, quantities of nitro-glycerine and dynamite and powder; batteries for generating electricity, and machinery for generating hydrogen and oxygen. These machines devised for generating oxygen will make more oxygen in an hour than was ever made by any machine before in a day. They look like sheet-iron stoves with steel cylinders stuck in at the top and connected by a rubber hose with the line of hose that leads to the cellar. The tubes are filled with potassium chlorate and black oxide of manganese, and by heat from gasoline burners in the stove the gas is generated. The experiment is not in any way a "crankism." Congress directed that it be done, and it is said that a hundred members of that body believe in the

theory underlying it. Assistant Secretary Willetts, who was directed to carry it out, himself a scholarly man, found the best suited men he could for the immediate work, and he is taking hold of it intelligently, willing to accept whatever result may follow, but determined to omit no effort for success. Whatever the immediate result to science and to all interested, the full benefit of intelligent, careful observation will be had at every step in an experiment involving great possibilities, and whose success would make the desert to blossom as the rose, and open homes for millions of people where now life is impossible.

A POND'S REVELATIONS.

A WORLD FILLED WITH COUNTLESS KINDS OF BEINGS.

To the naturalist a slimy, stagnant pool in the woods, filled with nastiness and disgusting of smell, is a world replete with fascinating interest, the home of countless kinds of beings, strange and wonderful. To begin with, the water teems with myriads of the very minute animals called infusoria, creatures of varied and curious shapes, some naked and others protected by limy shells. Of these there are hundreds of sorts, resembling, when seen under the microscope, coins, boats, stars, trumpets, pitchers, and wheels. Many appear also in the forms of fruits, necklaces, flasks, funnels, fans, and so forth, ad infinitum. A very common one is called the "flower cup," being in the likeness of a crystal vase containing what looks like the blossom of a plant. So small is this specimen that 13,000,000 of them may be comprised within a single drop of water. These little beings have eyes, muscular structure, and even nervous systems of their own, as it is believed. They move swiftly in pursuit of prey by means of oars, and a few of them actually have claws with which to grasp. Some of them lay eggs, others bring forth their young alive, while others still are propagated by division, each one separating into two. A few species are big enough to be seen with the naked eye, and one such, called the Stentor because of its trumpet shape, is particularly ferocious, devouring great quantities of its smaller cousins. More interesting even than these are the swarms of minute diatoms—creatures of a vegetable nature, which are chiefly remarkable for the elaborate beauty of their shells. The latter are bivalvular, like those of a mussel. Some are like little boxes, exquisitely made; others resemble boats, hearts, dominoes, etc. There is one sort that has been called the "Shield of Achilles," because each half of its disk-shaped shell is cut in concentric circles, with a complicated tracery of designs. In many varieties the valves seem ornamented with so fine a lace work that to distinguish the patterns is considered the best possible test of the power of a microscope. Inasmuch as the biggest ones can hardly be seen with the unaided eye, one kind is separated from another for purposes of study by pouring the water containing them from one breaker into another, then into still another, and so on, each time allowing a brief time for them to settle partly. Those which are heavier reach the bottom of the vessels before the lighter sorts, and thus the different species are separated by weight for mounting finally upon glass object slides. To obtain the clean shells they are boiled in nitric acid and treated with caustic potash. There are plenty of creatures in the stagnant pool however, which may be seen without the aid of microscope. For example, there are polyps, animals about a quarter of an inch in length, which look like little tubes of jelly as thick as a bristle, with thread-like arms for seizing their prey. They are incredibly fierce, and naturalists believe that they possess the power to paralyze their victims by electric shocks in the manner of the torpedo fish and the electric eel. In this way only can the fact be explained that their slender tentacles are able to secure game comparatively so large and powerful. A specimen has been seen to grasp two large worms at the same time, and yet the latter, though struggling desperately for their lives, were unable to break away, and in a moment lost all power of motion. Now and then a swelling appears on one part or another of the polyp's body, and from each such protuberance finally appears a young polyp, which separates from its parents when it is sufficiently grown to take care of itself. If any portion of the animal is cut off it soon grows again. One that is chopped in two quickly becomes two perfect individuals. Furthermore, if turned inside out like a glove it accommodates itself to the new arrangement, the original outer skin performing, as a lining of the interior, the office of digestion. Among the most curious of the pool's inhabitants are the larvæ of various insects. Most conspicuous of these is the mosquito in its aquatic stage, when it is fed upon voraciously by the larva of the dragon fly, or darning needle, as it is often called, which resembles a fierce-looking worm. It is well known that the dragon fly is an equally dangerous foe to the mosquito when both have acquired wings. To illustrate this the writer will venture to tell a true mosquito story. On Cape Cod there is a great fresh-water pond, formed originally by an advance of the ocean, which gave such alarm a few years ago that a dyke was constructed along the shore line to keep back the waves. Inside the dyke the water, which had formed a sort of lake, gradually became fresh, coarse grass grew thickly in it, and it was transformed into an ideal breeding place for mosquitoes. As the latter rise in swarms from this morass, myriads of dragon flies hover to leeward in wait to capture their favorite prey. So enormous are the numbers thus eaten that on a summer's day, in the wind ripples made in the sand, one may easily sweep together within a few minutes more than a bushel of dead mosquitoes, only the shells of the insect being left by the dragon flies after sucking out the juices. Among the most numerous of the visible occupants of the stagnant pool are the larvæ of the May fly, which in seasons unusually favorable to their production sometimes visit towns in such numbers, being blown before the wind, as to litter the streets, many cart loads of them being on occasion swept up and carried to the dumps. Another remarkable insect found in the slimy water is called the "monoculus," and is covered with a delicate shell marked with so fine a network as to present the appearance of mosaic. This valve is perfectly transparent, consisting of a single piece without hinge or joint, but sufficiently elastic to permit the animal to open it at pleasure. It affords protection not only to its occupant but also to the young of the latter, which swim into it when danger threatens, the shell opening for their reception and closing as soon as they have entered. Mention should not be neglected of many kinds of water beetles, which are very voracious, and are armed with strong claws for grasping their prey and tearing it to pieces. If a few are put in the same vessel together, they will fight with the utmost ferocity. At the bottom, among the weeds and leaves, are found certain caterpillar-like animals, which are nearly transparent. This species is called the "lurco," or "glutton," its entire body being occupied by a series of stomachs. Ever so many kinds of aquatic worms find their home in the pool, being often so numerous in the shallows as to color the mud red. Leeches are plentiful in such places, as every boy knows. There are several species of crustaceans, most conspicuous among them being the "cyclops," so called because it has but one eye, of a crimson hue, with two pairs of horns on each side of it. The body of this "water-flea," as it is sometimes designated, is covered with plates of armor, the shell-like material being usually transparent, like crystal, though sometimes adorned with beautiful tints. Turtles, also there are of certain varieties; likewise newts, polliwogs, frogs, snakes of more or less aquatic habits, and plenty of other animals too well known to speak of here. Not least important, in point of numbers or otherwise, of the organisms inhabiting the slimy, stagnant pool are bacteria of endless varieties. Most of them are harmless, but some are the germs of frightful diseases. To prove it, let any one try to drink the water, in which lurk malaria, typhoid fever, bowel disorders, and other horrors besides.

INITIATED.—"We have home-made pie," said the waiter lady in the Woman's Exchange. "Excuse me," said the pallid young man as he reached for his hat and started for the door, "I was looking for bakers' pie. I was married only last month."

OLD PATENT.—The earliest Connecticut patent found on record was granted in October, 1717, to Edward Hinman, of Stratford, for the exclusive right and liberty of making molasses from the stalks of Indian corn, in Fairfield County, for ten years, which grant ended with the words: "Always provided the said Hinman make as good molasses, and make it as cheap, as comes from the West Indies."

POISONED FISH.—The *Lancet* contains a warning against the use of iced fish. Ice spoils the freshness, firmness, and flavor of fish by rendering it, prior to putrefaction, insipid, soft, and flabby. When fish is preserved on ice, it appears that the ice only favors putrefaction by furnishing a constant supply of moisture, carrying with it the putrefactive bacteria derived from its unclean surroundings, so that this iced fish remains covered with fresh solutions of filth, pregnant with putrefactive bacteria. On the other hand, keeping fish dry and cold can in no way favor putrefaction.

BROTHER JONATHAN.—In Lebanon, Conn., on June 15, the Connecticut Historical Society, assisted by the Connecticut branches of the National Society of the Sons of the Revolution, took formal possession, with imposing exercises, of a most interesting and valuable Revolutionary relic building that was the office and the executive seat of Gov. Jonathan Trumbull, or "Brother Jonathan," as he was called, throughout the whole period of that war, and which has been donated to the State. The town was filled with visitors. The leading addresses were made in the forenoon by United States Senator J. R. Hawley, and in the afternoon by the Rev. Leonard W. Bacon, D. D.

FRENCH CANDY.—The very best "French" candy is now made in this country, but a very small quantity being imported. The tariff is 35 per cent. of the actual value, and that makes the imported article too expensive to have any chance against home manufactured goods. The secrets of the trade are, of course, numerous, and several of them have been brought to this country by emigrants and others. It is doubtful whether any candy now comes from France to the trade, though no doubt a good deal is brought by tourists and visitors. In the same way, "French" candy in the United States is often taken to Paris, while our best caramels have quite a large sale in all European capitals. The foreign makers cannot get such maple sugar as we use, and hence their inability to supply the home demand. In crystallized fruits France still holds front rank, the neat way in which their goods are finished and packed helping to maintain their popularity.—*St. Louis Globe-Democrat.*

LONDON'S SOOT AND FOGS.—The amount of carbonaceous and other particles deposited upon glass houses is a good indication of what the London atmosphere contains, and in many places it is only possible to procure a due admission of light to the plants by frequently washing the glass roofs. At one establishment last week two tanks constructed to collect the rain from a house completed a few years since, were cleared out, and no less than ten barrow-loads of sooty matter were removed, all of which must have been conveyed into the tanks from the glass. One scientific gentleman has been engaged in computing the amount of soot deposited from London air, and arrived at the following conclusions: He collected the smoke deposited on a patch of snow in Canonbury one square link, about 8 inches in extent, and obtained from it two grains of soot. As London covers 110 square miles, this would give us for the whole area 1,000 tons. As the quantity measured fell in ten days, a month's allowance would need 1,000 horses to cart it off, and these stretched in a line would extend four miles. Hence London's black fog.—*Pharmaceutical Record.*

ELECTRICAL PROGRESS.

WHAT ELECTRICITY IS EXPECTED TO DO AT THE COLUMBIAN EXPOSITION.

According to the Chicago *Herald* electricity now manœvers a bridge over the Chicago River. Within a short time it will probably supersede steam or hand power at all of them. There are two suburban electric surface railways, and authority for another has just been issued. The operation department of the World's Fair has just announced that the electric power plant for its use will be the greatest the world has yet seen. It will be the equivalent of 24,000 horse-power. At Philadelphia one Corliss engine of 1,456 horse-power did all the work. At the last Paris exposition 6,000 horse-power was required. Three electric cranes will run lengthwise in the Chicago machinery hall. Each will have a speed of 400 feet per minute, and a carrying capacity of 20 tons. They will be used for installation and removal of exhibits, for all motive power functions during the fair, except where exhibitors have special reasons for employing another, and will transport passengers from place to place within the inclosure. Electric energy plant in the machinery annex will require engines of 16,000 horse-power. The current will go directly through the entire grounds by wires from the plant. It will also light the grounds and buildings. Popularization of electricity has been progressing at accelerated rate. It will probably surprise many people to know that there are now in the United States in actual operation 307 electric street railways. They are distributed over forty states and territories. It is curious to note that while slow-moving Canada has only one, the young State of Washington has thirteen. It is observable, also, that they are most numerous in northern States, like New York, Pennsylvania, Massachusetts, Ohio, Illinois, which has twenty-two, and least numerous in southern states. Alabama and Arkansas have one each, Delaware one, Kentucky and Louisiana one each. In the far West the new force is invading mines. The proposal that by means of electricity the waters of Niagara Falls shall be made to run machinery in Chicago during the Fair seems less astonishing in view of the fact that water miles distant from mining camps is actually running their mills by means of wires. In one case a mine 1,500 feet above the s a, in a locality where fuel is scarce and no railway within fifteen miles, the problem of power was easily solved by electricity tapping a mountain stream with a circuit more than three miles in length. Niagara running lathes in the Columbian Exposition in 1893 will be less wonderful in this age than predictions of the applicability of the electric fluid for industrial use were a hundred years ago. The popularizing of the still only dimly understood force has progressed in many directions. It has transformed journalism from a mail bag into a flash-light. It has made mirrors of continents, so that they are rapidly becoming reflectors of each other. It has penetrated mountains and descended into the sea. It is to scour the heavens with telescopes, and it will probably furnish before long entirely new light to physical science by its already demonstrated power to weld metals. It has been plating metals for some time; now it is going to forge them as well. It ventilates, cools, or heats houses. In the Chicago *Herald* office it runs a fan by which a constant draft of fresh air is kept in motion. In a placer gold bed it trickles a stream of water that washes the ore and sends it out ready for the mint. It transmits messages along running trains, and will in a short time prevent collisions on land or water by giving automatic signals of proximity and speed. For its own propagation it has invaded other fields to secure new materials, and to compel invention of novel processes. It has introduced new chemistry and mechanics into pottery for the production of porcelain insulators. It has caused the manufacture of a substitute for india rubber better suited for the same purpose. It has encouraged successful experiments in metals for transmitters and joints. It has even entered silk manufacture, and led to the design of new qualities adapted for its needs. It is coloring fountains in many great cities and running blast furnaces. It will doubtless become the automatic mover of railway switches, and will in time notify the approach of earthquakes and cyclones. The electrical exhibition now in progress at Frankfort-on-the-Main, which our Fair Commissioners are visiting, shows boats run by electricity on the river, a waterfall made a prismatic wonder by electricity, a telescope with electric searchlight. Music will be transmitted by electricity, and at the World's Fair we will have fireworks by electricity surpassing the weirdest and most beautiful dreams that have flitted across the imagination of man. It has apparently solved the problem of subterranean rapid transit. The Greathead Underground Electric Railway of London, running since November last, has been free from smoke, damp and bad air, partly on account of the new method of treating the tunnel sides with iron tubing, tarred rope and cement, thus insuring against gases and water, and partly because of the cleanliness of the motive power. The rate of transit is from twenty-two to twenty-five miles an hour, or twice as fast as the average speed on the New York elevated roads. The process of tunneling, it is claimed, also prevents excavations from affecting foundations of buildings. From whatever side we look at it, the popularization of electricity is speeding in all directions. The World's Fair in 1893 will be astounding in manifold manifestations of its uses.

BUDDHISM.

THE CREED OF THE GREAT CINGALESE BONZE.

In a paper written for *La Lecture*, of Paris, M. Robert de Bonnieres says: "Not every one is aware that of the thirteen hundred million inhahitants of the earth five hundred millions are Buddhists. If the question as to what should be the religion of the world were submitted to universal suffrage, the Buddhist religion, or rather that philosophical morality, would have the majority. Having a good reason for visiting in Ceylon the High Priest of the Church of the South, I did not fail to call on him. The great Bonze lives some miles from Colombo, the principal town of Ceylon, in the village of Maligakanda, where is his seminary. This is a large inclosure planted with cocoa-trees, mango-trees and teaks, among which are scattered some very simple square buildings, with overhanging roof, supported by wooden pillars. His head shaved, his feet encased in leather sandals, dressed in a yellow toga which left the right arm and shoulder bare, Sumangala was seated under a shed. Surrounded by young priests dressed in the same fashion as himself, he was giving them a lesson. They spelt together some texts in Pali, engraved with a bodkin on resinous palm-leaves; when the text was in verse they sang it in chorus, in the tone of our singers at vespers. When the lesson was finished Sumangala rose and conducted us under the veranda of his little lodging, passing on the way beneath an arbor of pink begonias. He was a small, plump man, with a brown skin, active, and benevolent looking. His eyes were black, soft and piercing, incessantly moving. The Cingalese interpreter brought a large copper vase, which served as a spitbox. The teeth and mouth of the high priest were red with betel and bloody saliva. Betel leaf with a Buddhist priest takes the place which snuff occupies with many of our country curates in France. Sumangala was born at Sipkaduva, near Point de Galle, on February 22, 1828. He learned the Cingalese alphabet at home, and acquired a thorough knowledge of the sacred languages in the Buddhist temple. He was a seminarist at twelve years of age, a priest at twenty-one. His family was rich. His father was in the judicial department of the English civil service; his brother was a professor in the Academy at Ceylon. At first priest at Point de Galle, then High Priest at Adam's Peak, my host came to Colombo in 1872. As the priests take the name of the village where they are born, he is called the Sipkaduva-Sumangala. The great Bonze began by telling me that I must not confound the Church of the North, which is established in Thibet, China and Japan, with the Church of the South, to which belong Ceylon, Burmah, the Kingdom of Siam, and Cambodia. For the Church of the South, of which he is one of the chiefs, he claimed the "purity" of the true teaching of Buddha, "who was the wisest of mankind." He proceeded to enlighten me as to some points of usage and doctrine. A Buddhist priest must devote his time to teaching and meditation. He rises at five o'clock in the morning, and takes a slight repast at six o'clock to appease his hunger until his principal meal, which is at eleven. During the rest of the day he is forbidden to eat, but not to drink; he is permitted to drink only tea or orange juice. If priests eat in the evening, their minds become heavy and lazy, and they are not able to teach as well. Buddhist priests and their followers are not allowed to kill animals. At this time, however, the question is discussed as to whether they may eat the meat of animals killed by other hands than their own. Perhaps a council will meet to settle the question. A council is called only to decide whether the sacred books have been altered, and to try a bad priest. A priest is deposed only for having committed one of the four great mortal sins, which are: An illegitimate union, theft, assassination, and the great lie. The great lie is saying one is *arrahat;* that is, that one is omniscient and is Buddha when he is not. Like the mendicant orders of the Middle Ages, Buddhist priests can eat naught but what is given them; they have no kitchen or means of cooking of their own. Their rules are more severe than those of the Benedictines; they live on the charity of the faithful alone, and are not allowed to make money out of anything. The house in which Sumangala resides was given him by subscription. In Ceylon there is neither government allowance nor funds for religious purposes. Buddist priests must have nothing to do with women, and cannot even give them their hand, under penalty of being suspended from their functions for several days and of submitting to expiatory prayers. Sumangala then passed to a summary explanation of doctrine. To facilitate these explanations he caused to be brought a Buddhist catechism in English, and we read together its questions and answers. What is a Buddhist? He is one who professes to be a follower of Our Lord Buddha. Was Buddha a God? No. Was He a man? In form He was a man; but internally He was not like other men; that is, in mental and moral order He surpassed all the men of His time and all other times. Was Buddha His name? No; it is the name of a state of mind. Its significance? Illuminated; or He who has perfect wisdom. Did Buddha discover the cause of human misery? At last He discovered it. As the light of the rising sun scatters the shades of night and reveals everything to view, so the light of knowledge rose in His mind, and He saw clearly the causes of human suffering and the means of escaping them. Did He have to make great efforts to attain this knowledge? Yes; He had to conquer all the defects, the desires, and the appetites which deprive us of the sight of the truth? What is the light which can disperse our ignorance and drive away all troubles? The knowledge of the Four Noble Truths, as Buddha calls them. What are those truths? First, that misery always accompanies existence; second, that all modes of existence result from passion or desire; third, that there is no escape from existence except by destruction of desire; fourth, the means of obtaining the destruction of desire. When we are in possession of the four Noble Truths, at what do we arrive? At Nirvana. What is Nirvana? The state of perfect repose, the absence

of desire, of illusion, of pain, the complete annulment of everything which constitutes physical man. Before attaining Nirvana, man can be incessantly born again; when he has attained it he cannot be born again. This morality, which sets up nothingness as the supreme end of life, and makes perfection itself consist of conscious stupidity, is the height of pessimism. Yet what renders this philosophy supportable and even touching is the profound reflection it gives to the study of man, and the pity filled with goodness which the sight of men's miseries causes. In taking leave of the great Bonze, I asked him what had been during his life his joys, and his sorrows? He answered, good humoredly, "My happiness has consisted in knowing Buddha more and more; I have had no sorrow."

APPLIED SCIENCE.

THE GERMAN SYSTEM OF ALLYING ACQUISITION AND INVENTION.

In the *Popular Science Monthly* for August Mr. F. W. Clarke says: During this century nine-tenths of the great discoveries have been made by men with institutions back of them, through the aid of which the work was rendered possible. Wealth, scholarship, ability, and the spirit of research, too, seldom go together; and happy is the man in whom all these conditions are fortunately united. The truth of my last statement may be verified by a reference to the files of those standard scientific journals in which original researches are recorded, or by scrutinizing in detail the history of any great discovery. In either case, whether we consider this country or Europe, the university work will be found to predominate overwhelmingly, and for obvious reasons. Every true university is something more than the distributor of knowledge. It is a producer of knowledge also; and in Germany, where the university system is most fully developed, the two functions are equally recognized. A German student, aspiring to academic honors, must do original work, and the professors' chairs are always filled from among the men who have most distinguished themselves as investigators. A chemist who has done nothing for pure science could hardly be recognized in Germany. Not one of the higher professional positions would be within his reach. Erudition alone, unsustained by evidence of creative ability, would do little for his advancement. In consequence of this policy, Germany now leads the scientific world, and in consequence of that leadership a certain industrial supremacy is fast becoming hers. One example will serve to illustrate the tendency to which I refer. The aniline dyes were discovered by Perkin in England about thirty-five years ago, and in that country the manufacture began. To-day, through the researches of German universities, Germany is the centre of the coal tar industry, and England has only a subordinate rank. Until recently the English universities have slighted experimental science, and English manufacturers are paying for the neglect. One German firm alone, producers of coal tar colors, employs over 1,400 workmen; but with them there are about fifty scientific chemists, every one a man trained in pure research, the product of the university system. These men are engaged to make investigations, to improve processes, to discover new compounds of value, and, in short, to use the most vigorous methods of science for the upbuilding of industry. The German manufacturer does not employ a chemist who has only learned by rote the wisdom gained by others. He does not ask to be told that which he already knows. He seeks rather to push forward into new fields, to excel his competitors more by intelligence than by brute force, and to gain a growing supremacy in preference to a mere victory for the moment. This practical policy, the outgrowth of intellectual culture, has made Germany a dangerous rival to all other countries in those departments of industry which rest upon scientific foundations. Applied science cannot exist until there is the science to apply; and where the latter is most favored, the industrial development is sure to be the most perfect. This lesson is one which the United States must learn more thoroughly than heretofore, if it hopes to hold its own in the front rank of manufacturing nations. In a few of our universities the truth is already realized; but in too many American schools the so-called "practical" view prevails. Under the latter, teaching becomes routine, and the student, while learning elaborately that which is known, is not taught how to discover. He has little or no training in the art of solving unsolved problems, and that art is the mainspring of modern industrial growth. A teacher of science ought also to be an investigator, were it only for the inspiration that his example might give to the pupils in his charge. To impart knowledge is a good thing, but to reveal the sources of knowledge is better, and in that revelation is found the educational value of research regarded as a part of the teacher's essential duty.

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

August.

GAME AND POULTRY.—Pigeon, chicken, duck, woodcock.

MEAT.—Beef, lamb, mutton, ham, kidneys, liver, sausage, veal, venison.

FRUITS.—Cherries, raspberries, huckleberries, melons, gooseberries, blackberries, peaches, pears, tamarinds, bananas, pineapple, grapes, plums.

FISH.—Anchovy, bass, bluefish, blackfish, cod, eels, crabs, clams, flounders, halibut, herrings, lobster, mackerel, mussels, porgie, prawn, salmon, turtle, trout, sturgeon, whiting, weakfish, rockfish.

VEGETABLES. — Beans, beets, cucumbers, cabbage, carrots, cauliflower, corn, egg-plant, lettuce, onions, parsley, parsnips, potatoes, squash, shallots, spinach, turnips, radish, rhubarb, tomatoes.

PRACTICAL RECIPES.

CHICKEN SOUP.—Cut up all of a chicken with the exception of the breast, and break the bones, put the chicken in a soup pot with a pound of round steak cut into pieces. Cover with six quarts of water and cook until the chicken meat falls to pieces. Strain the soup, and to each quart add an ounce of rice, and simmer for three-quarters of an hour, then add the breast of the chicken, which has been cooked whole in the soup, cut into dice, a little minced parsley and seasonings of salt and pepper. The chicken soup meat may be used for souffle.

CHICKEN SOUFFLE.—Make a cream sauce as follows: Put a large table-spoonful of butter over the fire in a saucepan and when it is melted add a table-spoonful of flour, cook together for a few minutes then add a pint of hot milk. Stir well until the sauce is thick and smooth, then add to it while boiling two cupfuls finely chopped chicken, a teaspoonful of chopped parsley, a teaspoonful of onion juice, salt and pepper. Cook for two or three minutes only, then add the well beaten yolks of four eggs and set away to get quite cold. When cold add the whites of the four eggs beaten very stiff, and turn the whole into a buttered pudding dish. Bake for thirty minutes, then serve *at once* with cream sauce, in which there is some chopped mushrooms and parsley.

APPLE CHARLOTTE.—Line a buttered loaf tin with thin slices of home-made bread, dip the edges of the bread in white of egg, and fill the space with a smooth apple sauce seasoned with lemon rind and nutmeg or cinnamon; cover the top with strips of bread, put a small quantity of butter on top and bake one hour.

YELLOW JELLY.—Put an ounce of gelatine to soak in half a pint of water for an hour. Heat two cupfuls milk, add the gelatine, the beaten yolks of three eggs, a cupful of sugar and flavoring of vanilla. Boil it well, take from fire, whip up very stiff the whites of the the eggs, beat them into the jelly and pour into moulds to stiffen. Serve with thin boiled custard or sweet cream.

SPANISH FRUIT PUDDING.—Line a baking dish with a light puff paste, add a layer of shredded pineapple and cover it with powdered sugar, add a layer of sweet oranges sliced, strew over them a thin layer of sugar, next add a layer of sliced bananas with sugar strewn over them. Repeat the process until the dish is full. Cover the dish with a light puff paste, and bake to a delicate brown.

SPANISH ONIONS WITH EGGS.—Fry a Spanish onion cut into slices until it is done, in either oil or butter, then add a little flour and cook for a moment, add a little cream or milk sufficient to make a thick sauce, put in pepper, salt, a little grated nutmeg, and four hard boiled eggs cut into slices. Simmer until hot, then serve.

HAZELNUT CAKES.—Chop finely one pound hazelnuts, add one pound powdered sugar and two ounce flour, mix well and bake on buttered white paper, like macaroons, in a slow oven.

OPEN JOINTS IN DRAINS.—A suspected joint in a sewer or drain pipe may be tested by wrapping it with a single layer of white muslin moistened with a solution of acetate of lead. As the gas escapes through the meshes of the cloth it will be blackened by the sulphur compound.

SMELL OF PAINT.—On closing the premises at night, place on a stone in the centre of the floor a pan of lighted charcoal, on which a handful of juniper berries have been thrown. Leave this until the following morning, and when the doors are opened all the disagreeable vapors will disappear. Another method is to use a pail of water in which a bunch of hay is soaking, but this takes a longer time to effect the same result.

NEW MARKINGS.—Mr. A. Stanley Williams, of Burgess Hill, Sussex, has discovered three delicate but distinct markings in the equatorial region of Saturn. The first and third of these are round bright spots, somewhat brighter than the white equatorial zone in which they occur. The second is a smaller dark marking on the equatorial edge of the shaded belt which forms the southern boundary of the white zone. Mr. Williams has obtained abundant proofs of the reality of these markings but points out that it requires patience and practice to see them readily.

ALUMINUM MOTOR.—J. W. Hanson, a jeweler in St. Paul, Minn., and formerly a resident of Cincinnati, is having an electric motor made out of aluminum by a Sixth Street model making firm. It will be the first motor ever made of this new metal. It is gotten out on an entirely new design, occupies a small space, and is very light, yet accomplishes as much as an ordinary motor. Thus an ordinary motor may weigh 100 pounds or more, yet this weighing 20 or 30, being a quarter less than the ordinary, possesses great advantage in lightness. A boy can walk off with it.

WOODS THAT SINK.—There are 413 species of trees found within the limits of the United States and territories, sixteen of which, when perfectly seasoned, will sink in water. The heaviest of these is the black ironwood (*Condalia ferrea*), found only in Southern Florida, which is more than 30 per cent. heavier than water. Of the other fifteen, the best known are the lignum vitæ (*Guaiacum sanctum*) and the mangrove (*Rhizophora mangle*). Texas and New Mexico lands, full of queer, creeping, crawling, walking, and inanimate things, are the homes of a species of oak (*Quercus grisea*), which is about one and one-fourth times heavier than water, and which, when green, will sink almost as quickly as a bar of iron. It grows only in mountain regions, and has been found westward as far as the Colorado desert, where it grows at an elevation of 10,000 feet.

BOYS AND BONES.

A SCHOOL-BOY'S CONCEPTION OF HIS SKELETON.

The following composition, says Harlan H. Ballard, in the *Popular Science News*, was actually written for a school exercise, and is so amusing and bright that it was handed me by the teacher. The writer is not a member of the Agassiz Association, but he ought to be!

BONES.

Bones are the framework of the body. If I had no bones in me I would not have as much shape as I have now. If I had no bones in me I should not have so much motion, and grandmother would be glad, but I like to have motion. Bones give me motion because they are something hard for motion to cling to. If I had no bones, my brains, lungs, heart, and large blood-vessels would be lying around in me and might get hurted, but now the bones get hurted, but not much unless it is a hard hit. If my bones were burned I should be brittle, because it would take the animal out of me. If I was soaked in acid I should be limber. Teacher showed us a bone that had been soaked. I could bend it easily. I would rather be soaked than burned. Some of my bones don't grow close to my body, snug, like the branches of a tree, and I am glad they don't, for if they did I could not play leap-frog and other nice games I know. The reason why they don't grow that way is because they have joints. Joints is good things to have in bones. There are two kinds. The ball and socket, like my shoulder, is the best. Teacher showed it to me, only it was the thigh bone of an ox. One end was round, smooth, and whitish. That is the ball end. The other end was hollowed in deep. That is the socket, and it oils itself. It is the only machine that oils itself. Another joint is the hinge joint, like my elbow. It swings back and forth, and it oils itself. It never creaks like the school room door. There is another joint that don't seem like a joint. That is in the skull. It don't have no motion. All my bones put together in their right places make a skeleton. If I leave any out, or put any in their wrong places, it ain't no skeleton. Cripples and deformed people don't have no skeletons. Some animals have their skeletons on their outside. I am glad I ain't them animals; for my skeleton, like it is on the chart, would not look well on my outside.

FALLING STARS.

THE PRESENT STAGE OF OUR KNOWLEDGE OF METEORS.

Meteors, by which we mean especially the shooting and falling stars and fireballs, and the aerolites that sometimes fall to earth from interplanetary space, belong in many respects to the problematical phenomena of the heavens. Shooting stars are luminous objects that can be seen on any clear night darting through the sky, leaving a trail of light that lasts some seconds when the meteor is particularly bright. The record of observations made by J. Schmidt shows that the average number visible to a single person in the space of one hour is ten; that the average number can be seen between eleven o'clock and midnight, while the mean maximum frequency occurs at three o'clock in the morning; and that the frequency varies in different months of the year, being greatest in August and least in February. The number visible to the naked eye from all points of the earth's surface would on this basis average 450,000 per hour. The highest number that a single person has counted in an hour is 2,000. There are nights when these meteorites appear in swarms. Star showers occurring at irregular intervals are to be distinguished from the periodical phenomenon of the Leonids, or November meteors, which have been observed on different years at the same date—between the 12th and 15th of November. Periodicity has been noted in other showers; particularly those that occur between the 9th and 14th of August, which have been called, from the part of the heavens whence they appear to radiate, the August Perseids. Denning has established beyond doubt the existence of another periodical shower, the July Perseids, observable on the nights between the 26th and 30th of July, and likewise appearing to issue from the constellation of Perseus. At the same period of the year occurs the more brilliant shower of the Aquariads, which apparently emerge from Aquarius. Between the 20th and 25th of April occur the Lyraids, and a number of other similar periodic showers have been noted. The phenomena do not show the same striking beauty every year. For the Leonids a period of 33.28 years has been determined; for the August Perseids a main period of 104.06 years, and a minor period of 8.05 years; for the Lyriads a main period of 42.07 years, and a minor period of 7.01 years. It is doubtful whether the epoch of their return varies in the course of time, and it is certain that the conclusion of Coulvier-Gravier that the November and August showers are in the process of extinction is without foundation. Sporadic falling stars, as Julius Schmidt's observations at Athens have proved, are more numerous in the latter half of the year than in the earlier half. The Milan astronomer, Schiaparelli, explains this, and the fact that their frequency depends on the hour of the night, but not at all on the longitude of the point of observation. Supposing the meteorites to be minute bodies suspended in interstellar space, the question arises, What action would the earth have upon those that it strikes in its path around the sun? Encountering the face of the globe that is at any instant the forward one in the orbit, they are most commonly seen in the hours just preceding the dawn. The ecliptic, the eccentricity of the orbit, the variations of the seasons, and the geographical latitude must also be taken into account, and this explains the exceptions to the rule. In these latitudes the point toward which the earth is moving is much higher above the horizon in the second half of the year, and hence at that time more meteors are visible because they are not obscured by the vapor

Buffalo Lithia Water, Spring No. 2, in Bright's Disease, Gout, Stone in the Bladder, and Diseases Generally of Uric Acid Diathesis, Etc., Etc.

DR. WM. A. HAMMOND, of Washington, D. C., Surgeon General U. S. Army (retired), Professor of Diseases of the Mind and Nervous System in the University of New York, etc.

"I have for some time made use of the BUFFALO LITHIA WATER in cases of AFFECTIONS of the NERVOUS SYSTEM, complicated with BRIGHT'S DISEASE OF THE KIDNEYS or with a GOUTY DIATHESIS. *The results have been eminently satisfactory.* Lithia has for many years *been a favorite with me in like cases, but the* BUFFALO WATER CERTAINLY ACTS BETTER THAN ANY EXTEMPORANEOUS SOLUTION of THE LITHIA SALTS, and is, moreover, better borne by the stomach. I also often prescribe it in those cases of CEREBRAL HYPERÆMIA resulting from OVER MENTAL WORK—in which the condition called NERVOUS DYSPEPSIA exists—*and generally with* MARKED BENEFIT."

DR. WM. B. TOWLES, Professor of Anatomy and Materia Medica, in the Medical Department of the University of Virginia.

"BUFFALO LITHIA SPRINGS, No. 2, belongs to the ALKALINE OT, *perhaps, to the* ALKALINE SALINE Class, *for it has proved far more efficacious in many diseased conditions than any of the simple* ALKALINE waters.

"*I feel no hesitancy whatever in saying that in* GOUT, RHEUMATIC GOUT, RHEUMATISM, STONE *in the* BLADDER, and in all diseases of URIC ACID DIATHESIS, *I know of no remedy at all comparable to it.*

"*Its effects are marked in causing a disappearance of* ALBUMEN *from the urine. In a* single case of BRIGHT'S DISEASE *of the* KIDNEYS, I witnessed *decided beneficial results from its use, and from its action in this case I should have great confidence in it as a remedy in certain stages of this disease.* In DYSPEPSIA, especially that form of it in which there *is an excessive production of* ACID *during the process of nutrition*, in some of the PECULIAR AFFECTIONS *of* WOMEN, notably in SUPPRESSION of the MENSES, and in CHRONIC MALARIAL POISONING, etc., I have found it highly efficacious."

DR. G. HALSTEAD BOYLAND, late Professor of Surgery, Baltimore Medical College, late Surgeon French Army (Decorated), Member Baltimore Academy of Medicine, Member of American Medical Association.

"In BRIGHT'S DISEASE of the KIDNEYS, ACUTE or CHRONIC, BUFFALO LITHIA WATER, Spring No. 2, is, in my experience, *without a rival*, whether in the PARENCHYMATOUS form or INTERSTITIAL NEPHRITIS. In cases in which the ALBUMEN in the URINE reached as high as 50 per cent., I have known it under a course of this water gradually diminish and finally disappear, at the same time other alarming symptoms were relieved and the sufferers restored to health.

"In STONE in the BLADDER of the RED LITHIC ACID and the WHITE PHOSPHATIC DEPOSIT, the SOLVENT power of this water is *unmistakable.*"

Water in cases of one dozen half gallon bottles, $5.00 f. o. b. here.

THOS. F. COODE, Proprietor, BUFFALO LITHIA SPRINGS, VA.

contained in the lower atmosphere. The average brightness of meteors is about the same at all the hours of the night, and is somewhat less in February than in August and November. The apparent path of a meteor is usually a straight line, although Heir has observed wavy, sinuous and crooked paths. They appear to be moving downward as a rule, more seldom upward, and very rarely they take a horseshoe curve, first rising and then falling. Their occasional irregularity of motion is accounted for by unsymmetrical forms, causing them to act like boomerangs or other irregular projectiles. The apparent course gives no indication of the actual path. For the northern hemisphere Heir has located 84 radiating points for sporadic shooting stars, while Greg distinguishes 77 such regions in the heavens; Schmidt, 150; Schiaparelli, 189; and Denning 37 particular points. Careful studies of J. Schmidt show that the active radiants exhibit an increase in the frequency of meteors up to two o'clock every night, and that they remain constant from January till July, and then rapidly increase. Of their orbits and the relations of their planes to that of the earth's orbit, and of their periods of revolution, no calculations are possible, except in the cases of remarkably bright meteors that are obscured in many different places. The November and August star showers, by reason of their periodicity, admit of closer calculations. It may be assumed that these streams of meteorites move in an elliptical orbit, having the sun for one of its foci. The August stream is supposed to be a complete elliptical ring, into which the earth plunges every year on the 10th of August. It is continuous, for the phenomenon recurs annually, but not equal throughout its length, for in some years many more meteors are seen than in others. The perihelion is about equidistant with the earth from the sun and the aphelion is a third farther away than Neptune. The ring revolves in a direction opposite to the earth's orbit, which it crosses near the perihelion. A complete revolution is made in from 113 to 123 years. The November stream is not a ring, but a long swarm, which also moves in a direction contrary to the earth's motion, and completes its elliptical course in 33¼ years, reaching in aphelion the orbit of Uranus. Sporadic meteors can follow no regular path, owing to the disturbing influence of the planets. They may be taken to be members of the streams that have been deflected from the regular course by planetary attraction. The velocity of shooting stars is reckoned by Heir at five or six miles a second, and by others at nine miles. This high velocity is a strong proof of their cosmic origin. Meteors are first visible when fourteen or fifteen miles, and sometimes even thirty-five miles, above the earth's surface, and reach in their flight to within nine or ten miles of the surface, some even as close as three miles; but it is not always the brightest that come nearest. It follows that the earth's atmosphere, the friction of which makes them luminous, must extend much higher than can be reckoned from the phenomena of twilight, but is rarefied beyond any conception at the higher altitudes. Meteorites have been calculated by the uncertain methods pursued by H. Herschel to range in weight from six grammes to two or three kilogrammes. In color 76 per cent. are white, 16 per cent. yellow, 6 per cent. red, and 2 per cent. green.—*Die Natur, June*, 1891.

Exhaustion

Horsford's Acid Phosphate.

The phosphates of the system are consumed with every effort, and exhaustion usually indicates a lack of supply. The Acid Phosphate supplies the phosphates, thereby relieving exhaustion, and increasing the capacity for labor. Pleasant to the taste.

Dr. A. N. KROUT, Van Wert, O., says:
"Decidedly beneficial in nervous exhaustion."

Dr. S. T. NEWMAN, St. Louis, Mo., says:
"A remedy of great service in many forms of exhaustion."

DESCRIPTIVE PAMPHLET FREE.

RUMFORD CHEMICAL WORKS,
PROVIDENCE, R. I.

BEWARE OF SUBSTITUTES AND IMITATIONS.

CAUTION:—Be sure the word "Horsford's" is *printed* on the label. All others are spurious. Never sold in bulk.

BUSINESS NOTES.

HORSFORD'S ACID PHOSPHATE

Makes delicious lemonade. A teaspoonful added to a glass of hot or cold water, and sweetened to the taste, will be found refreshing and invigorating.

NEW SCHOOL.—The American Electro-Therapeutic Association will hold its first annual meeting at the hall of the College of Physicians, corner Locust and Thirteenth streets, Philadelphia, Pa., Thursday, Friday and Saturday, September 24th, 25th and 26th, 1891, under the presidency of Dr. G. Betton Massey.

LARGE RUBIES.—Three rubies of unusual size were sold at auction in London recently. They were the property of the Burmah Ruby Mine Company, Limited. The first, weighing 1,185 carats, irregular in form and deep red in color, sold for £400. The second, yellowish red in color, weighed 302 carats, and sold for £65. The third weighed 281 carats, was dull red in color, and brought £33 12s.

HOW IT ACTS.—Water extinguishes fire, not, as the common talk is, by virtue of any incompatibility between the two elements, but partly by the effect of the lowering of the temperature caused by its evaporation, and partly by acting as a mechanical extinguisher. Enveloping the parts of the body upon which it is thrown, it separates the combustible matter from the atmosphere, and cuts off the supply of oxygen, the life of the fire.

DEPTH OF THE INDIAN OCEAN.—An area having depths of 3,000 fathoms and more exists off the northwest coast of Australia. In addition to earlier observations between meridians of 100 and 106 degrees E. and parallels of 18 and 25 degrees S., new results were obtained in 1888 by the Eastern Telegraph Co.'s steamship Recorder, under Captain C. O. Madge. The depths found were from 3,015 to 3,393 fathoms, between the latitudes 13 degrees 40 minutes and 11 degrees 22 minutes, and the meridians 118 degrees 42 minutes and 116 degrees.

EARTH ODOR.—M. Berthelot has been investigating the cause of that peculiar and far from unpleasant odor which arises when vegetable soil is moistened. It proves to be produced by a camphor-like substance existing in extremely minute proportions—only a few millionths—exact analysis of which has not been practicable, on account of the small quantity obtainable. The author did not find the alcohol in the soil that M. Muntz claims to have detected there, and regards that found by M. Munts as only an exceptional product of the spontaneous fermentation of vegetable *debris*. The new odoriferous body has a similar action with alcocol in producing iodoform.

ORIGINAL. No. 53.

Luncheon Muffins.

BY MARIA PARLOA.

For one dozen muffins use one pint of flour, a generous half pint of milk, two teaspoonfuls of Cleveland's Baking Powder, half a teaspoonful of salt, two tablespoonfuls of sugar, three tablespoonfuls of butter and two eggs. Mix the dry ingredients together and rub through a sieve. Melt the butter. Beat the eggs till light and add the milk to them. Add this mixture to the dry ingredients; then stir in the melted butter. Beat the batter vigorously for a few seconds and then put in buttered muffin pans and bake for about twenty minutes in a quick oven.—(Copyright, 1891, by Cleveland Baking Powder Co.)

Use only Cleveland's baking powder, the proportions are made for that.



Cleveland's Superior Baking Powder is perfectly wholesome. It leavens most and leavens best.
Try a can.

25 CTS. PISO'S CURE FOR CURES WHERE ALL ELSE FAILS. Best Cough Syrup. Tastes good. Use in time. Sold by druggists. CONSUMPTION 25 CTS.

Fine Table Wines

From our Celebrated Orleans Vineyard.

Arpad Haraszthy & Co

Producers of the

ECLIPSE CHAMPAGNE,

530 Washington St. SAN FRANCISCO.

GENERAL AGENCIES:
NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOSEPH R. PEEBLES' SONS CO. 73 West Fourth Street.
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.

PURE PEPSIN

In Powder and Scale.

MANUFACTURED BY

ARMOUR & COMPANY, Chicago.

Guaranteed free from adulteration or make-weights; of excellent physical properties and high digestive power.

Under similar conditions, **ARMOUR'S PEPSIN** will exhibit greater activity than any other pepsin now before the profession.

The Manufacturers will be pleased to supply members of the Medical Profession with samples of their pepsin, and with full details regarding digestive strength, if desired.

SEE PAGE 404 FOR VALUABLE OFFER.

THESE OFFERS WILL BE WITHDRAWN SEPTEMBER 1, 1891.

WATCHES.

EVERY one wants a watch, and naturally a good watch that keeps accurate time, presents a handsome appearance, and is inexpensive. If such a watch can be found of American manufacture, it is an additional appeal to our patriotism. Just such a watch as this ideal THE ANALYST PUBLISHING COMPANY is enabled to offer as a Premium to its readers. Having some large advertising contracts we have been enabled to procure the movements of the manufacture of the best known American watch factories, namely, the Waltham, Elgin, Hampden and Illinois Watch Companies. These movements are adapted for both ladies' and gentlemen's watches, and are warranted by the makers. These movements have seven jewels, patent lever movement, chronometer balance, patent safety pinion, sunk hard-enameled dial, straight line visible palette, stem winders, hand set; in fact, contain all the latest improvements and can be readily cleaned or repaired by any ordinary good watchmaker. They can be regulated to run as close as any movement.



It is needless to say that to case these movements in solid gold cases would make them too expensive, yet they are cased in what are known as gold filled or stiffened "Ladd" cases, and are warranted to be 14 karat gold, made from two sheets of 14 karat gold overlaying fine composition metal, with regular jointed caps, covers and bezels, and to wear at least five years. They are not plated, nor rolled gold, but actual 14 karat gold cases, thin of course, but stiffened and strengthened by being filled with this fine composition metal. They are finished in the same manner, engine turned and engraved as solid gold watches, and wear and look just the same. No one but an expert can tell them from a solid gold watch. These watches are made both open face and hunting case style, in gentlemen's or ladies' sizes. For gentlemen we recommend plain engine-turned cases; for ladies, a handsomely engraved case.

How to Obtain One of these Watches.

These watches are not to be purchased from us at any price. Send us a club of 25 subscribers to the AMERICAN ANALYST, and $25, the regular subscription price, and one of these watches (your choice of style and size) will be immediately forwarded, post-paid and registered, to your address. You need not wait until you have your 25 subscribers all together, but forward them as you get them and they will be credited to you, and when the number is complete the watch will be sent. A subscription for two or three years will be counted as two or three subscribers.

As these watches are retailed by jewelers at not less than $25, it will be seen that we are offering a real premium with the sole object of increasing our circulation, and that by taking advantage of our offer any one can obtain a good, reliable and handsome watch without cost. As the number of these watches at this price is limited, it is advisable to take steps at once to procure a bargain.

THE ANALYST PUBLISHING CO., 19 PARK PLACE, NEW YORK.

BICYCLES

GIVEN AWAY TO BOYS AND GIRLS!

AN OPPORTUNITY OPEN TO ALL.

The Analyst Publishing Company being desirous of largely increasing their subscription list, will furnish every one with a beautiful Safety Bicycle, ABSOLUTELY FREE, in return for a few hours' canvassing.

To every boy and girl who secures 75 subscribers for the American Analyst at $75, we will give a splendid

$40.00

NONPAREIL

SAFETY BICYCLE.



These bicycles are adapted in size to boys, but are strong enough to carry a man. A boy's bicycle should be a strong one. They are manufactured by the OVERMAN WHEEL CO., the makers of the celebrated VICTOR Bicycle, and have the full guarantee of the makers.

The following is a brief description of the NONPAREIL SAFETY; 26-inch wheels; ball bearing all around, including pedals; solid crescent rims; double tangent spokes; three-fourths inch tires; cranks, three throw, $4\frac{1}{4}$ to $5\frac{3}{8}$ inches; guards to both wheels; tool-bag, oiler and wrench. Finished in bright enamel, all exposed metal heavy nickel-plate on copper.

In selecting these machines as a premium, we have disregarded cheapness and selected a Bicycle which is serviceable, and the makers of which have an established reputation for building the best Bicycle that money, machinery and brains can produce. We are actually furnishing the Bicycles and Papers at less than cost, but hope by stimulating active and successful canvassing, and thus enlarging our subscription lists, to make an eventual profit. We positively guarantee these bicycles to be just as here represented. They will be shipped by express f. o. b. in New York.

Subscription orders must be made out plainly and legibly, and sent as fast as secured, addressed to

THE ANALYST PUBLISHING CO., 19 Park Place, New York.

TO ADVERTISERS.

It is now nearly seven years since the AMERICAN ANALYST began its mission as an advocate of pure food and an opponent of sham products. The history of its labors in that field, even if confined to a reviewal of the success it has achieved in exposing and defeating unscrupulous schemes involving risk to the health and depletion to the purse of the public, would require greater space to rehearse than is available within the limits of this page. As we have heretofore had occasion to explain, in relation to the purposes of this journal, humbugs seeking to enrich themselves through the sale of high-sounding specifics for various human ailments, are subjected to the crucial test of thorough chemical analysis of their goods; and where the latter, as too frequently occurs, prove to be frauds, the facts are placed before our readers in order to save the public from further unconscious imposition. The AMERICAN ANALYST, in addition to the warfare it wages against that species of malefactor, co-operates regularly with the Boards of Health of this and other cities in efforts to secure sanitary and food reforms through organized efforts, and it is conceded to be the only popular medium through which those bodies can bring their purposes and action intelligently before the general public. Reaching as it does all classes—manufacturers, merchants, physicians, chemists, and private families—all over the land, its influence is exerted over a vast radius, producing results as visibly marked as they are wide-spreading. The scope of this journal, however, is not limired to the missionary work above described. Its varied contents cover almost the entire field of scientific as well as social progress, and each yearly volume constitutes a compendium of current facts in nearly every department of knowledge such as can nowhere else be obtained in such comprehensive shape and so cheaply. In this relation we take occasion to publish here a few extracts from a large number of similar compliments that we have received from strangers as well as from our regular patrons. A New Haven editor writes: 'As a newspaper man, and one with a strong, active instinct for good miscellany matter, I want to congratulate you on your publication. The ANALYST is certainly a unique and valuable periodical, and I feel sure that if you press its sale you will gather in thousands who are waiting only to see it before subscribing." A London editor writes us: "I have just seen your excellent paper for the first time, and I am quite delighted with it. I wish you would exchange it for my magazine." A New York journalist, one of the most famous in the profession in America, bore down upon us with the following unexpected praise: "I cannot refrain from congratulating you on the ANALYST. Its brainy suggestions make it one of the most welcome of my exchanges." A well-known scientist says, in the course of a letter on other subjects: "Part of my leisure this summer has been devoted to cutting up my files of scientific papers. It may please you to know that I was astonished to find how perfectly you have kept the ANALYST abreast of scientific thought. It is indeed a valuable paper, and I congratulate you on your success in making it so worthy an addition to technical literature." These extracts will suffice to show the estimation in which the AMERICAN ANALYST is held by experts familiar with its purposes and methods. It is essentially a paper for the family, and with the low subscription price of only one dollar, it ought to find regular and welcome lodgment in every household in the United States.

HAMMOND'S
CELEBRATED
Calumet Oleomargarine
Strictly pure, cheap and healthful.
Ask your grocer for it.
Put up in packages of all sizes, also prints and rolls.
C. H. HAMMOND CO.,
607 to 615 THE ROOKERY,
CHICAGO.
Also offices at Boston, South Omaha, Neb., and Hammond, Ind.



DETECTIVE! WE WANT A MAN IN every **locality** to act as **Private Detective** under our instructions. Send stamp for particulars.
WASHINGTON DETECTIVE AGENCY,
Box 787. Washington, Iowa.



We shall be glad to supply our readers with any periodical published at club rates.
Send us a postal naming periodical and we will quote you prices.
ANALYST PUBLISHING CO.,
19 Park Place,
New York.

FORTUNE TELLING FISH!!
ALMOST HUMAN in its Movements and Actions.
GREATEST NOVELTY OUT. Gives exact definition of character. Can be carried in vest pocket.
AGENTS COIN MONEY. Sample sent to any address **10c.**, one dozen **75c.**, three dozen **$1.50**, postpaid.
EUREKA MANUFACTURING CO., Hinsdale, Ill.

LADY AGENTS WANTED.
I have a medical specialty for ladies use, which is one of the best selling articles in the country. You can make a good income handling it, and at the same time be doing your sex a great benefit. Write me at once for full information and exclusive territory. If you wish a sample sent enclose 12 cents postage. Dr. H. H. Jackson, 103 State Street, Chicago.

We can save you Fifty Dollars when you Build. See:

A complete set of Plans to build from, simply state about price of dwelling desired. 25 cts. in stamps. Our book "Beautiful Homes." 25 cts. Our monthly book "The National Builder," 25 cts. Address
The National Builder, Adams Exp. Bldg., Chicago, Ill.



GOLD MEDAL, PARIS 1878.

W. BAKER & Co.'s
Breakfast Cocoa
from which the excess of oil has been removed,
Is Absolutely Pure and it is Soluble.
No Chemicals
are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.
Sold by Grocers everywhere.
W. BAKER & CO., DORCHESTER, MASS.

CONFEDERATE MONEY.

Warranted Genuine and in Good Condition.

We are extensive dealers in Confederate Money—rare relics of our late civil war; also Bullets, Cannon Balls, etc. We want agents in every city North to sell these mementoes, and we will pay agents handsomely to sell our goods. We will furnish the money to those desiring at the following retail prices: Shinplasters, 10, 25, 50 and 75 cents each, or the entire set 50 cents. Complete sets, consisting of $100, $50, $20, $10, $5, $2, $1, 50c., $1 per set. $500 bills, $2 50 each. $100 bills, 15 cents, or two for 25 cents. $50 bills, 10 cents, or two for 15 cents. $5 and $20, 5 cents each. 50c., $1 and $2, 25 cents each. Inquirers enclose stamp for reply.

Publishers of SOUTHERN AGENT, Atlanta, Ga.

LITTLE BOYS AND GIRLS

MAKE EASILY $2 A DAY.

Write for particulars. Address

BARKER PUBLISHING COMPANY, Atlanta, Ga.

$5, $10 and $20

CONFEDERATE BILLS,

only five cents each. AGENTS WANTED.

SOUTHERN STAR, Atlanta, Ga.

PUBLICATIONS OF THE

ANALYST PUBLISHING CO.

THE AMERICAN ANALYST.
Weekly. Every Thursday. $1 per year.

THE ROOFER, TINNER AND SHEET-IRON WORKER.
Monthly. 15th each month, $1 per year.

THE LEATHER MANUFACTURER.
Monthly. 1st each month. $3 per year.

Reliable agents and representatives wanted everywhere on liberal terms. Address

ANALYST PUBLISHING CO.
19 PARK PLACE, NEW YORK.



We Can Save You—— Fifty Dollars When You Build.

If you are thinking of building a home, here is an opportunity to secure one or several designs of houses which will aid you in deciding just what you want.

PLANS READY TO BUILD FROM

ONLY 25 CTS. EACH

Or Five Sets for One Dollar.

The designs given below to select from are practical and are drawn to a large scale by Geo. O. Garnsey, architect for THE NATIONAL BUILDER. Each one consists of a large, beautifully colored picture of a front elevation, including the floor plans, the details, the specifications, and carefully prepared estimates of cost, and all ready to build from. By a special premium arrangement we are enabled to sell these plans at the above extremely low price. **Specify number of Design.** Send all orders to

THE ANALYST PUBLISHING CO.,
No. 19 PARK PLACE, NEW YORK CITY.

No. 2. **Clover Cottage.** Neat, cosy and modern. Cost, $1,960.
No. 3. **6-Room Elegant Brick Residence.** Suitable for city or country; Handsome Front, Good Basement, etc. Cost, $3,500.
No. 4. **6-Room Modern Residence.** Handsome Front, with broad circular Veranda. Cost, $3,000.
No. 5. **Cheap 5-Room Genteel Cottage:** With Reception Hall, 9x12, and good Basement. Cost, $2,000.
No. 6. **8-Room Residence.** Handsome Front, neat Porch, etc. One of a series of residences much in demand. Cost, $3,000.
No. 10. **Bank and Store Fronts.** Showing different styles of Show Windows, and highly Ornamented Fronts. Two designs. Cost, $1,613 and $1,325.
No. 17. **Double City Flat Building.** Six rooms in each flat; building adapted to narrow lot. Ornamental, Romanesque Front. Cost, $10,000.
No. 19. **Queen Anne Cottage, Eight Rooms.** Good light; exhibiting good effect. Cost, $4,000.
No. 21. **Maplewood Cottage, Three Rooms.** Abundance of piazza. Very neat and convenient. Cost, $1,000.
No. 22. **Hyacinthe Cottage, Three Rooms.** Very odd and pleasing. Cost, $750.
No. 23. **Clovernook Cottage.** New in style. Cost, $750.
No. 25. **Eastlake Cottage, 8 Rooms.** Neat 2 story Frame. Cost, $1,875.
No. 26. **Smith Stone Cottage, Six Room.** This design is handsome. Cost, $2,575.
No. 38. **Cheap City House, Eight Rooms.** Suited for inside lot; nicely laid out. Cost, $2,600.
No. 40. **Charming Suburban Cottage of Five Rooms.** Very roomy and convenient. Cost, $2,500.
No. 42. **Beautiful 6-Room Cottage.** Handsomely designed; all modern improvements. Cost, $3,100.
No. 49. **Neat Village Church.** Seating capacity about 600. Cost, $7-500.
No. 50. **Store and Office Building.** Brick; 2 stores and 8 offices, very handsome. Cost, $7,000.
No. 51. **Modern Suburban Residence of Nine Rooms.** Beautiful design. Cost, $2,100.
No. 57. **Rosedale Cottage, 3 Rooms.** With Bay Window, Frame. Cost, $1,000.

"BILLET"

are

Carefully Selected

French Sardines,

Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS.

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,

HOWARD STREET, BOSTON, MASS.

OUR GREAT OFFER

TO SUBSCRIBERS

TO THE

AMERICAN ANALYST.

We will send the **ENTIRE SET OF DICKENS' WORKS,** *in* **TWELVE VOLUMES,** *as here described, all postage prepaid by ourselves, also* **THE AMERICAN ANALYST** *for* **ONE YEAR,** *upon receipt of* **$1.50,** *which is only* **50** *cents more than the regular subscription price of this paper.* Our readers, therefore, practically get a set of Dickens' works in twelve volumes for only **50** cents. This is the grandest premium ever offered. Up to this time a set of Dickens' works has usually been $10.00 or more. Tell all your friends that they can get a set of Dickens' works in twelve volumes, with a year's subscription to **THE AMERICAN ANALYST** for only **$1.50.** Subscribe now and get this great premium. If your subscription has not yet expired, it will make no difference, for it will be extended one year from date of expiration. We will also give a set of Dickens', as above, free and post-paid, to any one sending us a club of three yearly subscribers.

ADDRESS:

THE ANALYST PUBLISHING CO.
No. 19 PARK PLACE,
NEW YORK.

TABASCO PEPPER SAUCE,

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced by connoisseurs to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY'S SON,

NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

To Subscribers, Readers and Advertisers.

SUBSCRIBERS' attention is called to the great variety of interesting and instructive subjects treated in this number. We respectfully ask the co-operation of our subscribers in extending our Subscription list, which will enable us still further to increase the value of the AMERICAN ANALYST to them.

The CASUAL READER is specially requested to examine our liberal premium offer.

ADVERTISERS who do not know of this Journal already, are respectfully referred to article headed "A Business Benefit."

ALL are kindly requested to peruse this number thoroughly.

The AMERICAN ANALYST can be had at any news stand in the United States. Any newsdealer will take orders for it, the American News Company being our wholesale agents. All postmasters will receive subscriptions.

NATRONA BI-CARBONATE OF SODA.

(ABSOLUTELY PURE.)

The nature of the raw material from which NATRONA BI-CARBONATE OF SODA is made—viz., kryolith, a mineral containing *pure sodium*—insures a purity and uniformity of product which cannot be obtained from any other known material. In making BI-CARB. SODA from any other raw material, the use of sulphuric acid is a necessity, but none is used in any part of the process of making NATRONA BI-CARB.; hence its entire freedom from the slightest trace of arsenic, which is always present in ordinary soda. Its absolute purity and entire freedom from all traces of *sulphate of soda*, common salt and other impurities, render NATRONA BI-CARB. NEARLY TASTELESS, and being bolted through the finest bolting-cloth, insures the finest stage of division.

To these indisputable facts the attention of CONSUMERS of soda is specially called. They are IMPORTANT, and should influence both those who use and those who sell soda, to buy and sell NONE BUT THE BEST.

The NATRONA BI-CARB. Soda is kept in stock by almost every wholesale druggist and grocer throughout the United States, of whom it may be ordered.

Natrona Bi-Carb. Soda is unequaled by any other brand of English or American Manufacture.

PENNA. SALT MANUFACTURING CO.,

NATRONA CHEMICAL WORKS. PHILADELPHIA, PA.



ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,
184 Greenwich St., N.Y.

DO YOU KNOW THE **DANGER** OF USING SOAP?

IF YOU ARE GOING TO THE COUNTRY, DO NOT FAIL TO READ THE FOLLOWING.

WE do not mean soap made from proper material; and when we tell you that about ninety-nine per cent. of Toilet Soap is made from refuse fats gathered from tenement houses, hospitals, butcher shops, and from cattle dying of disease or during transportation, you will, we believe stop and think. Putrefactive changes have taken place in most of this material, as it is mixed with lean meat, blood, bones, sinews, etc. There is at least *one* soap that is made wholly from vegetable material—OLIVE and PALM OILS—and that is

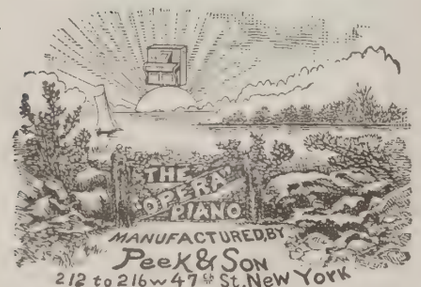
VELVET SKIN SOAP.

It will keep the skin soft and in a healthy condition, as no animal fats are used in its manufacture. Nothing in one's personal outfit is quite so satisfactory as a thoroughly reliable Toilet Soap. We are confident that a trial of this article will insure its continued use. If the dealer does not keep it, do not take any other, but require him to order it for you, which he can do readily. **Otherwise, send to us direct.**

MANUFACTURED BY

REED & CARNRICK, Manufacturing Chemists,

44? GREENWICH STREET, NEW YORK.



A HIGH-GRADE PIANO

AT A VERY MODERATE PRICE.

NEW DESIGNS. FANCY WOODS.

Terms Easy. + Monthly Instalments.

TWO, THREE AND FOUR PEDALS.

Catalogues, Prices, Terms, Etc., sent to any address.

EVERY PIANO WARRANTED 5 YEARS.

(Mention this Paper.)

THE LABORATORY.

To Inventors, Manufacturers and Applicants for Patents

The AMERICAN ANALYST may be consulted upon all matters involving theoretical or applied chemistry. Advice and opinions given. Analyses and assays made. Patents perfected and secured. Terms reasonable.

Address, AMERICAN ANALYST,
10 Park Place, N. Y.

SWIFT'S

CHOICE

Chicago Dressed Beef

AND

MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,

UNION STOCK YARDS,

CHICAGO, ILLS.

THE ORIGINAL AND GENUINE
(WORCESTERSHIRE SAUCE).



LEA & PERRINS' SAUCE

In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—

Lea & Perrins

Beware of Imitations; see that you get Lea & Perrins'

For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS, NEW YORK.

GLENN'S
SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,

C. N. CRITTENTON,

115 FULTON STREET,

NEW YORK.

Be progressive and keep abreast of the times. Avoid dyspepsia by using **Lard Compound** and **Cottolene,** a substitute for lard.

The highest medical authorities pronounce them healthful; and expert cooks commend them.

Our **Clairette** brand of cotton oil soap is the purest and best laundry soap in the market; as pleasant to the hands as genuine castile.

N. K. FAIRBANK & CO.,

CHICAGO AND ST. LOUIS.

The Standard of Excellence

KINGSFORD'S

OSWEGO

Pure and Silver Gloss



STARCH

KINGSFORD'S

OSWEGO CORN STARCH

FOR

Puddings, Custards, Blanc-Mange, Etc

THE PERFECTION OF QUALITY.

WILL PLEASE YOU EVERY TIME.

Always ask your Grocer for these goods.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 35. NEW YORK, THURSDAY, AUGUST 27, 1891. WHOLE No. 235

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - $1 per year.
Single Copies, - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.
Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.
Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,

H. LASSING, M. D., T. P. McELRATH, *Editors.*

No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

Bright Stories—"Jenny," by Victor Hugo..... 412
Botanic Freaks..... 410
Currants or Corinths?..... 413
Domestic Dietetics..... 413
Editorials..... 409
The Microscope in Court; Electric Light Prospects; Important Discoveries; Contemporaneous Courtesies.
Food Fancies..... 412
La Manhattienne..... 414
Tea, Theine and Tannin..... 411
Women's Work..... 411

THE MICROSCOPE IN COURT.

The superiority in producing romantic incident of truth over fiction has been too long established to justify its mention otherwise than in casual reference to it as a universally conceded fact. It is this concomitant of human every-day experience that furnishes most of the material, popularly styled "sensational," of which so much is made by the enterprising newspapers of the present period. The records of our law tribunals, the criminal courts especially, are replete with incident of the exciting character referred to, and the jaded novelist, weary of racking his brain for new suggestions for his plots, might there find an inexhaustible fund of material covering every possible phase of passion and sentiment, and of variety as infinite and complex as the ineffable operations of the heart and mind of humanity. For some reason, however, which it would be out of place to investigate here, the domain to which we refer does not seem to attract the attention of novel writers to the extent that might be expected of a field so fertile, except when some intellect like that of Wilkie Collins or of Charles Reade displays its masterly power by weaving into a semblance of fiction the threads of romance that surround us constantly in real life, but whose capacity to thrill the heart and excite the imagination is revealed to only genius of that high and exceptional order. Our attention has been attracted to the subject by a paper read, on August 11th, at the annual meeting at Washington, D. C., of the American Society of Microscopists. A gathering of that prosaic kind would hardly be looked to as a fountain-head of romantic suggestion, and yet, incongruous as it may appear, the essay in question, treating of the most serious facts, embodies every quality essential for the construction of the most sensational story imaginable. In the narrative it unfolds we perceive the technical skill and constructive aptitude of the trained scientist operating in conjunction with the ratiocinative logic of a Poe and the ferret-like instinct of a Gaboriau in tracing to their starting point, through an apparently impenetrable labyrinth, the threads of a terrible tragedy, with the happy and unanticipated result of establishing the innocence of a man nearly convicted of murder, and of throwing open the prison gates from which it had appeared, after a year of unjust incarceration, there was to be no outlet except to the gallows. In the accomplishment of this brilliant outcome the microscope was the chief instrument used, its skilful manipulator being Dr. Frank L. James, the distinguished president of the National Association above mentioned. The use of the microscope for facilitating the ends of justice is growing with the gradual perfection of the instrument, and with the advanced knowledge of its value and capability for working it which the Microscopists' society is effectively cultivating. A generation ago it was popularly esteemed a toy, its serious import being appreciated by only a few enthusiasts. To-day it stands high as an instrument of accuracy, as it places before our senses its wondrous revelations of a hitherto invisible world. In a recent famous criminal trial in this city it alone furnished what was accepted as the convicting link between a murdered woman and the instrument of her assassination. In the other case referred to it produced the only testimony that saved an innocent man from the gallows. "*Tantum series juncturaque pollet*," said Horace, of old, which we may interpret to mean, "Such power is there in the proper arrangement and skilful combination of reason and science." We regret that we are unable to give here the details of the trial for murder of Charles F. Vail, in St. Louis, but the interest of the narrative rests wholly upon the really wonderful manner in which inductive reasoning, fortified at each step by the results of a series of ingenious experiments, was competent to extort from mute matter a chain of incontrovertible facts that upset the whole fabric which the prosecution had laboriously contrived. The mere recapitulation of these would fill upwards of three pages of this journal, that being the space accorded to them in the *National Druggist*, from which we derive our acquaintance with the case. We understand that the entire paper will be published in the forthcoming volume of proceedings of the American Society of Microscopists, fully illustrated with photographs and drawings. The case will unquestionably take high rank among the *causes celebres* in which the microscope has been conspicuously employed, and some of its features at least will be utilized by our fiction mongers.

ELECTRIC LIGHT PROSPECTS.

Experiments recently conducted by Mr. Nikola Tesla for the purpose of showing how houses can be electrically lighted by lamps with one wire, or even with no wire at all, have produced a great sensation in Europe. Mr. Tesla showed that Geissler tubes three feet long were converted into brilliant beams of light by being held near a coil or a large sheet of tin plate connected with a pole of an alternating machine, and he remarked that if he had time at his command to make the necessary preparations he could have produced an electrical field capable of lighting up the whole of the lecture hall by means of similar tubes suspended at intervals from the ceiling. It is generally believed that the results obtained by Mr. Tesla will within a very short time lead to a complete revolution in the artificial production of light, and that we stand on the threshold of discoveries even more startling and possibly more momentous than the invention of the dynamo or the telephone.

IMPORTANT DISCOVERY.

We learn by our English exchanges that it has just been discovered that the standard yard, and certain other measures and weights supposed to have been lost when the houses of Parliament were destroyed by fire in 1834, are still in existence. For over half a century they have lain in the Journal office, almost unnoticed, and but for some inquiries recently set on foot by Mr. Bull, the chief clerk, respecting the present standards, they might have remained unnoticed for a much longer period. A reference to the contemporary records shows that after the fire the standard bars of 1758 and 1760 were both found among the ruins, "but they were too much injured to indicate the measure of a yard which had been marked upon them." The principal injury to both of the standards was the loss of the left-hand gold stud, but whether this was caused by the action of the flames or otherwise is not known. The most important standards thus rescued from oblivion are the yard measures constructed by Bird in 1758 and 1760. The former was copied from a bar in the possession of the Royal Society, which was itself a copy of a standard preserved in the Tower; and the second was constructed under the directions of a committee of the House of Commons from the 1758 standard. "Each of these

two standard yards consisted of a solid brass bar 1.05 in. square in section and 39.73 in. long. Near each end of the upper surface gold pins or studs 0.1 in. in diameter were inserted and points or dots were marked upon the gold to determine the length of the yard." The other standards in the custody of the Journal office are two brass rods answering the description of the old exchequer yard, and four weights supposed to be certain of the "copies, models, patterns, and multiples" ordered by the House on May 21, 1760, "to be locked up by the clerk and kept by him." The most important weight—the standard troy pound—is not amongst those now brought to light.

CONTEMPORANEOUS COURTESIES.

In our issue of July 2 (page 317), we reprinted from the *Journal of Commerce* of this city a very interesting article on the subject of "Superstition." By some inadvertence, or oversight in the correction of the proof sheets of the issue in question, the credit to that paper was omitted. No complaint has been made of our thus unintentionally appropriating our contemporary's wisdom, nor do we suppose the fact has been noticed, but we take this opportunity of expressing regret for the circumstance, as it is our invariable custom, or purpose, at least, to give honest credit for all borrowed material. We should be gratified if we could elicit similar courtesy towards ourselves from some of our esteemed contemporaries.

BOTANIC FREAKS.

SOME OF THE WONDERS OF THE NATIONAL GARDEN.

A new species of vegetable whiskey-shop has been added to the collection of plant curiosities in the National Botanic Garden in Washington, writes Rene Bache. The liquor it distils in the pitcher-shaped receptacles that hang from its stems is especially liked by frogs, which hop into these traps for the purpose of drinking it. Although the sweetish fluid is a powerful intoxicant, the batrachian customer, however wildly over-stimulated, would certainly jump out again were it not that two very sharp, dagger-like thorns project downward from the lip of the vessel in such a manner that Mr. Frog, in trying to escape, is thrust through the body by them at every leap, until presently he falls dead in the "liquid refreshment"—an appropriate object lesson to all intemperate persons—whereupon the plant absorbs his substance, as the ordinary whiskey-shop consumes that of its frequenter, and is thus supported. This species is tropical, and has to be kept in the greenhouse devoted to plants of the equatorial belt. Naturally, there are no frogs in the conservatory, and so Superintendent Smith is obliged to feed this eccentric vegetable with raw meat chopped fine, on which it thrives excellently. For lack of insects, likewise, he supplies with the same artificial sustenance the other sorts of whiskey-shops that find in bugs of various descriptions their chosen prey. They will all eat beef, although each variety seems to have in nature its particular line of customers, one capturing cockroaches, another ants, and so on. Doubtless they all could live on any animal food, but there seems to be a difference of taste among the insects as to the liquors. One species will only touch the drink served by a certain representative of this carnivorous plant family; another selects by preference a different brew, and so on. Thus but one sort of bug is ordinarily found in each set of pitchers, those designed for the accommodation of large beetles and cockroaches being as big as small shoes. It is very curious to cut open one of these vessels after it has become withered and dead, being merely formed at one end of the leaf, and to find what a wonderful collection of victims it has gathered in and not finally digested, often numbering many hundreds, if the prey is small. The whole structure of each trap is beyond measure curious, the inner surface of some coated with little bristles that project downward, and prevent the guests so hospitably received from walking out again. This is particularly a feature of what the superintendent calls the vegetable lager beer saloons, which prepare a liquor of much less intoxicating quality in tall chalice-shaped vessels instead of pitchers, depending upon drowning their customers rather than upon making them so drunk that they cannot get away. A deplorable thing it seems, by the way, to find such bad habits prevalent among bugs, the opinion having been always held that only man—the most noble of animals—had a right to indulge in vices, to the elaboration and invention of which he has given so much attention. A novelty at the Botanic Garden is a plant whose leaf bears a remarkably well executed caricature of the Duke of Wellington, all done in the veining; but in the interest of visitors it does not seriously rival either the "mother-in-law plant," a scrap of which swells up your tongue so that you cannot speak for days, or the famous "butcher plant" of Maryland, that has, instead of leaves, so many pairs of toothed jaws that close upon any insect venturing between to get at the sweetish bait within. This "butcher plant," which grows nowhere in the world save in the vicinity of Wilmington, Del., suffers from its carnivorous habits, being a chronic victim of indigestion. Each stomach trap, having used up most of the gastric juice which it secretes in digesting the first living prey caught, usually finds the second victim it captures disagree with it, and the third it is unable to assimilate satisfactorily. Then the trap turns from green to brown and dies, like any leaf, other fresh ones developing, meanwhile, to take up the work of gobbling. After all, this greedy vegetable is not nearly so bad as the "cruel plant," as it is called, whose flowers wantonly capture unsuspecting butterflies that alight to sip honey, and hold them until they are dead, when the grasp of the ruthless petals is relinquished and the luckless visitor is dropped on the ground. It is astonishing what intelligence many vegetables exhibit. Naturalists have come to be much inclined toward thinking that a plant really has thoughts. Its mind, as they conceive, is situated in the rootlet, which knows so well always what path to pursue through the soil in search of water. Plants even employ insects as their servants, in the work of reproducing their species, paying them wages in honey. Most vegetables combine the two sexes in one flower; but breeding "in and in" is no more healthy for them than it is for animals. One blossom must marry with another if the species is to be continued in a healthy way. So young Mr. Honeysuckle dresses himself in a spring suit of bright yellow, and perfumes himself deliciously for the purpose of attracting the gay butterflies that flutter around. He always provides a small store of nectar in a golden cup to offer any insect guest that may come his way. Presently a butterfly pauses to take a sip of the sweet liquor; but, in doing so, she cannot avoid getting some of the pollen on her head, and this she carries to another honeysuckle, where she stops for a second bit of refreshment, and incidentally rubs off some of the pollen upon its stigma. Thus is accomplished the marriage of the flowers. But the bee is the Cupid of the vegetable world, to whom is assigned most of this marrying and giving in marriage among the blossoms. There is one kind of orchid that depends altogether for the continuance of its species upon fights among bees. To a moral delinquency on their part it may be said to owe its survival entirely. The petals of each of its flowers are so bent as to form a sort of little tunnel, and to get at the honey a bee must go in at one end or the other. If nothing interferes, it will never come into contact with any of the pollen; but now and then it happens that it meets another bee, which has entered from the other side. Then there is a fight, and in the scrimmage the combatants get bounced around and are covered with the reproductive powder. However, in order to accomplish anything, one of these bees must go off and have the same sort of fight in another orchid blossom, so as to transfer a portion of the pollen to the stigma. Luckily this occurs often enough to perpetuate the plant. There is an extraordinary flower that grows in the hot and damp jungles of the Malay peninsula, where it is called by the natives the "wonder-wonder." It is a blossom, and nothing else, without leaves or stem, which grows out of the wood of decaying vines. This parasite is sometimes three feet across, its globular central cup having a capacity of six quarts. The strong odor it exhales resembles that of decaying meat so strongly that flies swarm upon it, and it secures fertilization through their means. A book might be made of the freak plants of the world. There is the vegetable boa constrictor of India, known as the "maloo climber," which twines about great trees and strangles them to death, so that they decay, fall, in and often leave the empty tower of climbers standing erect. An African nut called the "balanites" is used as a sort of natural bombshell; when filled with gunpowder and set off, it explodes with a loud report. The familiar Brazil nut grows in hard, spherical pods, each of which contains from eighteen to twenty-four of the triangular seeds that come to market. So beautifully are they packed by nature that no man has ever been able to put them back in their receptacle after once they have been taken out. In South America also there is a "cow-tree," which gives milk that is shown by chemical analysis to be of almost exactly the same composition as that of the cow, which it resembles to perfection in appearance and quality, tasting like sweet cream. Deep in the swamps and forests of the Island of Formosa grows a plant, the stems of which are filled with a fine white pith. This pith is cut by the Chinese into thin strips, and is called "rice paper." Bodies of the dead suspended within hollows of the "Baobab" tree that grows in Africa are transformed into mummies for all eternity without further process of embalmment. On the elevated barren plains west of the Volga grows a plant closely resembling a lamb, which was said by travellers of old to bend from the stalk, upon which it could turn, and feed upon the herbage about it, but when the grass died it perished from hunger. The likeness referred to is not to be denied, though its death when the grass dries up is due to the same cause that kills the other vegetation, namely, drought. Every one has heard of the famous "deadly upas tree" of Java, which was declared to grow in a desert all alone—no other plants around it, nor fish in the waters, nor animals of any sort, since even the birds flying over were killed by its effluvium. Criminals condemned to die, according to the story, were offered the chance to escape execution by going to the tree and collecting some of its poison. About two out of every score returned, and they reported having found the ground strewn with bones of their predecessors. Subsequent investigation has discovered a certain basis of truth in the tale, which lies in the fact that these upas trees grow in low volcanic valleys, rendered unwholesome by the sulphurous fumes escaping from crevices in the earth. Streams in such neighborhoods are so impregnated with sulphuric acid that no fishes can live in them. The tree's juice is very poisonous, but otherwise it is harmless. Most strange and grotesque of the plants at the Botanic Garden are the cacti. They would appear to to have been created by Nature in a freakish and irresponsible mood. One might imagine them to properly belong in some other world than this, only half alive as they seem, and assuming such extraordinary and even absurd forms. Certain naturalists have imagined that they must be relics of a vegetation belonging to a period long prior to the development of the plant-life familiar to the present generation. Their characteristic spines, entitling them to the name of vegetable hedgehogs, accentuate their impossibility as contemporary species. The larger forms, some towering to fifty feet in height, and other individuals weighing a

ton or more, plentifully adorn the Mexican landscape, which in many parts obtains an aspect extremely weird from these astonishing growths. That country, in fact, contains three-fourths of the entire number of varieties known. Nature provides the cacti with spines in order to save them from being eaten by animals. Horses are very fond of them, and will frequently devour them, after kicking off the prickly surface with their hoofs. It is from a species of cactus that cochineal is obtained, and for the purpose of gathering from it the insects so valuable in commerce, great estates are planted with it in the West Indies, Algeria, the Canary Islands and India. The plants are set out in rows, trimmed to the height of four or five feet. In August or September of each year is the season for what is called the "sowing," when the field hands attach to the cacti, by means of thorns, leaves covered with female bugs, which are thus left in order that they may produce their young. The latter quickly swarm over the plants, from which they are removed four months later with blunt knives. This process is a tedious one, seventy thousand being required to make a pound. Finally the insects are killed by immersion in boiling water, and dried in the sun, that being the condition in which they are exported. One of the most surprising curiosities in this branch of the vegetable kingdom is the "Old Man cactus," which derives its name from the silvery white hairs that cover the upper part of its stem, giving it a peculiar resemblance to the hoary head of an aged man. The hairs are, in reality, soft, weak spines. When the plant is grown in the house it is best accommodated in a glass case, inasmuch as dust will otherwise render the hairs dingy, and impart to the old gentleman a very disreputable appearance. RENE BACHE.

TEA, THEINE AND TANNIN.

A NEWSPAPER EXPERT'S VIEWS ON THE SUBJECT OF TEA DRINKING.

Our sometimes heavy but always profound contemporary, the *Journal of Commerce*, says: The discussions concerning the innocuous character of tea as a common beverage which filled the columns of newspapers some years ago, are once more revived in private circles, and we have received a number of communications asking an expression of our opinion on the subject. There is something to be said on both sides of the question. When properly made and served, the moderate use of tea is wholesome and to be commended. The average composition is carbo-hydrates (gum and sugar), 21 per cent.; fatty matters, 4; albumenoids, 15; tannin, 15 to 26; vegetable fibre, 20; mineral subtances, 5; water, 5; theïne, 2 to 3, and aromatic oil, 1 per cent. The last two are the features which give to the beverage its flavor and refreshing quality. The theïne of tea is so identical with the caffeïne of coffee that the most expert chemist cannot distinguish between them. The tannin gives to tea its astringency, and is the least desirable of its constituent elements. In Appleton's Encyclopædia there is a statement that "it is impossible to make really good tea with hard water." We think the writer never read in the history of New York the description of its earlier days, when the "tea wells" were the favorite resort of those who were longing for a delicious cup of that "which cheers and not inebriates." There was no fraud in the recommendation. The water from certain wells did produce a finer beverage than the contents of the ordinary bucket dipped in other localities. The secret was not far to seek, and the puzzle was solved when it was found that the water in question drew out all the theïne and oil, and much less of tannin than the fluid found elsewhere. It was hard and not soft water that made the tea so prized by the epicures of that olden time. When at its best the description of Lo Yu, given many centuries ago, does not exaggerate its excellent qualities: "It tempers the spirits and harmonizes the mind, dispels lassitude and relieves fatigue, awakens thought and dispels drowsiness, lightens or refreshes the body and clears the perceptive faculties." We may add that the gentle exhilaration which accompanies the moderate use of tea properly prepared is not followed by the depression or reaction which succeeds the use of alcoholic stimulants. On the other hand, as commonly made, boiling out the tannin to give it a high color and an astringent flavor, it produces cerebral excitement, promotes insomnia and nervous irritability, decreases the flow of saliva necessary to digestion, and thus brings on dyspepsia and constipation. The theïne of tea and the caffeïne of coffee are the alkaloid craved by almost every human system, and when unmixed with anything deleterious are always innocuous and universally refreshing. The aromatic oil does not add to the healthful quality, but does impart a more delicious flavor to the beverage. Tea should never be boiled under any circumstances whatever. As to the water to be used we have several remarks to make worthy of especial attention. Whether it is hard or soft is of less importance than how it is treated. Where houses are furnished with hot and cold water the average cook, if left to herself, will fill the tea kettle from the hot water faucet in the kitchen. We know that when questioned she will deny it, but she does it, notwithstanding the disclaimer, always when she is in a hurry, and nine times out of ten even when she has abundant leisure. When we state that fresh water boiled fifteen minutes and then left standing in the kettle half an hour will not by any possibility whatever produce a cup of tea fit to be drank, what may be said of tea made from water that has "sizzled" in a boiler for twenty-four hours? We advise tea drinkers to look also into the kettles used by their cooks. We never saw one not just brought from the store that was not crusted over at the bottom with a deposit of lime. Water out of such a utensil will not make a healthy cup of tea. If any one wishes to test this matter for himself let him have a little metal frame that will fit on any ordinary gas burner, leaving a flat surface at the top, on which to set a cup. If properly constructed (we have several in use) it will consume all the gas when lighted, will not smoke or smirch the cup placed over it, and (the sure test) will leave no odor whatever in the room to show that it is lighted. Take a common tin cup and pour into it a teacup and a half of pure cold water. Stir into this a teaspoonful of good English breakfast tea, and place the cup over the gas. The moment it comes to the boiling point pour it out through a silver strainer into a china teacup and season to the taste. That one experiment will show for all time to come how tea may be made. Regulate the strength by experience, as adding more tea to the infusion will only increase the tannin without drawing out any more theïne, and adding boiled water is almost certain to injure the flavor. A very important point to be observed, if tea is to serve as a wholesome, refreshing beverage is the method of drinking it. It should never be taken with food in alternate swallows according to a too prevalent custom. No liquid of this character should be taken with food. A horse or cow would die of indigestion if food and drink were administered to the animal as these are used by many people at their ordinary meals. First eat and then drink is the example set by the brute creation. A meal should always be served in courses, no matter how plain the table. Warm tea taken with food is less injurious than cold water, but it does retard the digestion and is always more or less hurtful. The great mistake made by Americans in their diet comes from the free use of diluents, especially at meal time. The ice water thus drank is an unmitigated curse. It kills annually far more people than die from the use of the alcoholic stimulants. A mouthful of food is chewed, mixed with saliva which the act produces, and is then swallowed. The stomach left to itself will take immediate care of it, turn it into a gray mixture suitable for home consumption and make it a vehicle of nourishment. But the eater cannot let well enough alone and on the top of his mouthful thus prepared he swallows a quantity of iced fluid from the goblet beside his plate. This chills the stomach at once, and the food taken with such an accompaniment will often lie as a load awaiting a revival of the digestive powers. A cup of hot tea, in which there is always more or less tannin, swallowed with the food, will also retard the digestion, although if properly made it is not as dangerous as the freezing water.

WOMEN'S WORK.

A NEW FIELD OF EFFORT AS SANITARY ENGINEERS.

A new career for women is suggested by the fact that a female sanitary engineer is now practising in London. She appears to be a lady of varied knowledge, as she has received certificates for music, art, hygiene, divinity, physiology, and sanitary science. She is a lecturer on domestic economy and hygiene at the Wordsworth College, London, and it is said gives learned discourses on the same subjects at the meetings of the National Health Society. This lady of versatile genius is Miss Scott, and she has been choosen to represent the women of England at the forthcoming International Congress of Hygiene, and will read a paper there. Miss Scott states: "I have visited slaughter houses, workshops, dairies, and all manner of places in order to get information, and have learned all that I possibly can about plumber's work. Of course I understand, too, all about the laying of drains, water mains, connections, and so on. I have had an application to examine and survey the drainage of a house in Hampstead. I expect I shall have to draw up a plan of the whole sanitary arrangements." There is nothing out of the way in women becoming sanitary engineers. When ability in this direction is applied to domestic sanitation, and women more generally become informed on the subject, the result will be more homes in a state of healthfulness. Women have made excellent inspectors, and their natural tendency towards cleanliness adapts them to sanitary work. Whatever a woman may find to do in a professional way with sanitary engineering, she can find a broad and inviting field for labor in securing the sanitation of her household.

ELECTRIC BOATS.—Electric pleasure boats are now in use in many places. Storage batteries are used in them, although the novelty is somewhat expensive.

FRUIT AND GOUT.—Recent researches in medicine show that persons having a tendency to gouty troubles generally improve more rapidly when they eat no fruit.

TELLING RESULTS.—The new sanitary measures adopted in England within the last few years, have reduced the number of deaths from consumption fully 30 per cent.

PIPE TEST.—To determine whether the joint of a sewer pipe leaks or not, wrap it with a piece of white cloth saturated with a solution of acetate of lead. If it leaks, the cloth will become black.

ALPINE OBSERVATORY.—The survey for an observatory upon Mount Blanc is now being made, and as soon as it is shown that iron columns can be sunk through the ice cap forming the summit, plans for the observatory will be prepared.

WRITING AND SPINE DISEASE.—In Austria it has been found that the slanting of letters in writing causes curvature of the spine, due to the position mainained at the table or desk, and a supreme council has recommended that upright letters be cultivated in schooling.

BRIGHT STORIES.

JENNY.

Translated from the French of Victor Hugo.

I.

It was night. The cabin, poor, but warm and cosey, was full of a half twilight, through which the objects of the interior were but dimly visible by the glimmer of the embers which flickered on the hearth and reddened the dark rafters overhead. The fisherman's nets were hanging on the wall. Some homely pots and pans twinkled on a rough shelf in the corner. Beside a great bed, with long, falling curtains, a mattress was extended on a couple of old benches, on which five little children were asleep like cherubs in a nest. By the bedside, with her forehead pressed against the counterpane, knelt the children's mother. She was alone. Outside the cabin the black ocean, dashed with stormy snow-flakes, moaned and murmured, and her husband was at sea. From his boyhood he had been a fisherman. His life, as one may say, had been a daily fight with the great waters; for every day the children must be fed, and every day, rain, wind, or tempest, out went his boat to fish. And while, in his four-sailed boat, he plied his solitary task at sea, his wife at home patched the old sails, mended the nets, looked to the hooks, or watched the little fire where the fish-soup was boiling. As soon as the five children were asleep, she fell upon her knees and prayed to Heaven for her husband in his struggle with the waves and darkness. And truly such a life as his was hard. The likeliest place for fish was a mere speck among the breakers, not more than twice as large as his own cabin—a spot obscure, capricious, changing on the moving desert, and yet which had to be discovered, in the fog and tempest of a winter night, by sheer skill and knowledge of the tides and winds. And there—while the gliding waves ran past like emerald serpents, and the gulf of darkness rolled and tossed, and the straining rigging groaned as if in terror—there, amidst the icy seas, he thought of his own Jenny; and Jenny, in her cottage, thought of him with tears.

She was thinking of him then and praying. The sea-gull's harsh and mocking cry distressed her, and the roaring of the billows on the reef alarmed her soul. But she was wrapped in thoughts—thoughts of their poverty. Their little children went barefooted winter and summer. Wheat bread they never ate, only bread of barley. Heavens! the wind roared like the bellows of a forge, and the sea-coast echoed like an anvil. She wept and trembled. Poor wives whose husbands are at sea! How terrible to say, "My dear ones—father, lover, brothers, sons—are in the tempest!" But Jenny was still more unhappy. Her husband was alone—alone without assistance on this bitter night. Her children were too little to assist him. Poor mother! Now she says, "I wish they were grown up to help their father!" Foolish dream! In years to come, when they are with their father in the tempest, she will say with tears, "I wish they were but children still!"

II.

Jenny took her lantern and her cloak. "It is time," she said to herself, "to see whether he is coming back, whether the sea is calmer, and whether the light is burning on the signal mast." She went out. There was nothing to be seen—barely a streak of white on the horizon. It was raining—the dark, cold rain of early morning. No cabin window showed a gleam of light.

All at once, while peering round her, her eyes perceived a tumble-down old cabin which showed no sign of light or fire. The door was swinging in the wind, the worm-eaten walls seemed scarcely able to support the crazy roof, on which the wind shook the yellow, filthy tufts of rotten thatch.

"Stay," she cried, "I am forgetting the poor widow whom my husband found the other day alone and ill. I must see how she is getting on."

She knocked at the door and listened. No one answered. Jenny shivered in the cold sea-wind.

"She is ill. And her poor children! She has only two of them; but she is very poor, and has no husband."

She knocked again, and called out, "Hey, neighbor!" But the cabin was still silent.

"Heaven!" she said, "how sound she sleeps, that it requires so much to wake her!"

At the instant the door opened of itself. She entered. Her lantern illumined the interior of the dark and silent cabin, and showed her the water falling from the ceiling as through the openings of a sieve. At the end of the room an awful form was lying—a woman stretched out motionless, with bare feet and sightless eyes. Her cold white arm hung down among the straw of the pallet. She was dead. Once a strong and happy mother, she was now only the spectre which remains of poor humanity, after a long struggle with the world.

Near the bed on which the mother lay, two little children—a boy and a girl—slept together in their cradle, and were smiling in their dreams. Their mother, when she felt that she was dying, had laid her cloak across their feet and wrapped them in her dress, to keep them warm when she herself was cold.

How sound they slept in their old, tottering cradle, with their calm breath and quiet little faces! It seemed as if nothing could awake these sleeping orphans. Outside the rain beat down in floods, and the sea gave forth a sound like an alarm-bell. From the old creviced roof, through which blew the gale, a drop of water fell on the dead face, and ran down it like a tear.

III.

What had Jenny been about in the dead woman's house? What was she carrying off beneath her cloak? Why was her heart beating? Why did she hasten with such trembling steps to her own cabin, without daring to look back? What did she hide in her own bed, behind the curtain? What had she been stealing?

When she entered the cabin the cliffs were growing white. She sank upon the chair beside the bed. She was very pale; it seemed as if she felt repentance. Her forehead fell upon the pillow, and at intervals, with broken words, she murmured to herself, while outside the cabin moaned the savage sea.

"My poor man! Oh, heavens, what will he say? He has already so much trouble. What have I done now? Five children on our hands already! Their father toils and toils, and yet, as if he had not care enough already, I must give him this care more. Is that he? No, nothing. I have done wrong—he would do quite right to beat me. Is that he? No! So much the better! The door moves as if some one were coming in; but no. To think that I should feel afraid to see him enter!"

Then she remained absorbed in thought, and shivering with the cold, unconscious of all outward sounds, of the black cormorants which passed shrieking, and of the rage of wind and sea.

All at once the door flew open, a streak of the white light of morning entered, and the fisherman, dragging his dripping net, appeared upon the threshold, and cried, with a gay laugh, "Here comes the Navy!"

"You!" cried Jenny; and she clasped her husband like a lover, and pressed her mouth against his rough jacket.

"Here I am, wife," he said, showing in the firelight the good-natured and contented face which Jenny loved so well.

"I have been unlucky," he continued.

"What kind of weather have you had?"

"Dreadful!"

"And the fishing?"

"Bad. But never mind. I have you in my arms again and I am satisfied. I have caught nothing at all. I have only torn my net. The deuce was in the wind to-night. At one moment of the tempest I thought the boat was foundering, and the cable broke. But what have you been doing all this time?"

Jenny felt a shiver in the darkness.

"I?" she said, in trouble. "Oh, nothing; just as usual. I have been sewing. I have been listening to the thunder of the sea, and I was frightened."

"Yes, the winter is a hard time. But never mind it now."

Then, trembling as if she were going to commit a crime:

"Husband," she said, "our neighbor is dead. She must have died last night, soon after you went out. She has left two little children, one called Wilhelm and the other Madeline. The boy can hardly toddle, and the girl can only lisp. The poor, good woman was in dreadful want."

The man looked grave. Throwing into a corner his fur cap, sodden by the tempest: "The deuce!" he said, scratching his head. "We already have five children; this makes seven. And already in bad weather we have to go without our supper. What shall we do now? Bah, it is not my fault; it's God's doing. These are things too deep for me. Why has He taken away their mother from these mites? These matters are too difficult to understand. One has to be a scholar to see through them. Such tiny scraps of children! Wife, go and fetch them. If they are awake, they must be frightened to be alone with their dead mother. We will bring them up with ours. They will be brother and sister to our five. When God sees that we have to feed this little girl and boy besides our own, He will let us take more fish. As for me, I will drink water. I will work twice as hard. Enough! Be off and bring them! But what is the matter? Does it vex you? You are generally quicker than this."

His wife drew back the curtain.

"Look!" she said.

FOOD FANCIES.

SOME SAVORY SUGGESTIONS FROM A BRITISH CONTEMPORARY.

The French make great use of lettuce as a vegetable, and a most excellent vegetable it is, cooked either *a la creme* or *au jus*.

A plain and easy way of cooking new-laid eggs for breakfast is to steam them during four minutes in a potato steamer.

The Blenheim is the best all-round apple grown in this country. It makes a perfect dish cooked without sugar, and that, we take it, is the highest test for an apple.

The vol-au-vent, or fly-in-the-wind pie, is the lightest sort of pastry known to French cooks, and is filled with mushrooms and other appetizing dainties swimming in a rich sauce.

Bananas peeled, cut into long slices, fried in butter and laid on a hot dish, and garnished with eggs also fried in the same butter, constitute a particularly nice entrée for a light dinner or luncheon.

A correspondent of *Rod and Gun* reports a culinary experiment of some interest. A couple of adult otters were captured at Killaloe, and the tails converted into a soup, which was found to be quite as palatable as any oxtail soup.

So-called "roast" meat cooked in ovens is a delusion and a snare. Roast meat is roast meat, and in order to roast you must have an open fire, before which your joint is placed in such a manner that the air circulates freely around it.

The best frying bath is one composed of beef suet and veal fat in equal proportions, melted down; the grease of the dripping-pan and of the pot-au-feu is also good; lard, too, may be used, although it leaves the surface of the fried food less pure.

An exquisite cold hors d'œuvre are fresh figs, served at the beginning of the repast. In Southern Europe one gets this hors d'œuvre in perfection. Anywhere around the Bay of Naples a dish of figs, a slice of smoked ham, and a flask of red wine make a delicious meal.

The last new sandwich is composed of chopped celery and powdered Parmesan cheese, with an infinitesimal addition of cayenne pepper. This preparation may be laid between thin slices of either white or brown bread and butter. It would answer equally well as a savory.

It is not generally known that eggs can be easily flavored to suit the taste. They at once absorb any fragrance or odor with which they are placed in contact, and by storing the eggs in a basket lined with roses or violets they will shortly be found to have acquired the flavor of the flowers.

In cooking cauliflower, asparagus, string beans, and any other vegetable which may sometimes have a slightly bitter taste, due to accidents of culture or what not, it is well always to put a lump of loaf sugar into the water. This precaution will effectually counteract the bitterness, if there be any.

Cookery books generally recommend the use of a beaten egg to make the flour, bread crumbs, or chopelure adhere to a sole, for instance, which is to be fried. A simpler method is to dip the sole in milk and then roll it in your flour; thus you avoid the thick lumps and patches of crust which are almost inevitable when an egg is used.

In the matter of sandwiches, it is now difficult to find a novelty. The following little snack made its first appearance at a recent reception of a well known leader of fashion. It looked like a roll of brown bread and butter, but further investigation showed that it was a sort of pate formed of brown bread, ham and chicken—these three things pounded together, and then moulded as you do quenelles. So made, sandwiches are appetizing and worth experimenting with in public bars, although rather expensive.—*London Caterer.*

CURRANTS OR CORINTHS?

CORNER GROCERY WISDOM EMITTED THROUGH A REPORTER.

"Mother wants a pound of dried currants," said a little girl who came into the learned grocer's store on Eighth avenue. "I hain't got a dried currant in the store, and there hain't one in the city," replied the grocer. "But I know what you want, and I've got 'em." The learned grocer brought forth a box of the little sticky, sugary, dried fruit popularly known as dried currants, and used in fruit cake, plum puddings, mince pies, buns, and the like. "Why, them's 'em!" said the little girl. "Yes, them's 'em," assented the grocer; "and if the Grecian maiden who trod this particular lot of fruit into the package had used a little water on her feet before she began, there wouldn't be so much sand and grit in 'em as there is. She must have been having a regular hoe-down on the classic sands before she began to dance on this box of fruit. There, sissy, tell your mother she must bathe 'em in several waters before she uses 'em, or she might just as well put a lot of sand-paper in her fruit cake. And tell her they ain't dried currants, either." "What's the reason they ain't dried currants?" asked a disputative customer. "They ain't dried currants any more than they're dried pumpkins!" replied the grocer. "The reason they ain't dried currants is that they weren't currants before they were dried. That's reason enough, ain't it?" "Yes," said the customer, less disputative. "But what does everybody call 'em dried currants for?" "'Cause they don't know any better," replied the grocer. They'll go right on coming in here and asking for dried currants just the same after I tell 'em why they ain't dried currants as they did before." "What should they ask for, then?" inquired the customer. "If any man should come in here and ask for dried corinths," said the grocer, "he would not necessarily be a gentleman, but I'd bet on him for being a scholar. Dried corinths is what you should ask for when you want this little sugar-coated, gritty raisin, for it's a raisin, pure and simple." "How's that?" the customer wanted to know. "Because it was a grape before it was dried," said the grocer, "and if dried grapes ain't raisins what are they?" "But you said these were dried corinths!" said the customer. "What's a corinth, anyhow?" "A corinth is the smallest grape that grows," replied the grocer, "and it lost its name years and years ago, because it was gradually corrupted into currant, which became the name of the acidulated little berry of our garden, which you might dry from now until Gabriel sounds his horn without getting it any nearer the condition of a raisin than a pea is. This little grape grows all over the islands of the Grecian archipelago, and was first exported from Corinth, and that's what gave it its name. The bunches don't grow much bigger than a stem of red currants, and they are so full of sugar that when they are picked and dried in the sun they actually seem to melt and run together, and it takes a good deal of care and labor to separate them again. After they are separated is the time that the Grecian maiden gets her work in on them, for it is one of her pleasant duties to jump on a heap of the sticky fruit with her bare feet until she has compressed enough of the little raisins to pile three boxes into one. No hydraulic press could do it any better. If it could, we wouldn't have the sand and grit the maidens' feet mingled with the fruit, without which no dried corinths are genuine. Still I shall expect folks to come in here and ask for dried currants just the same," said the learned grocer, as he went to wait on a new customer.—*Sun.*

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

August.

GAME AND POULTRY.—Pigeon, chicken, duck, woodcock.

MEAT.—Beef, lamb, mutton, ham, kidneys, liver, sausage, veal, venison.

FRUITS.—Cherries, raspberries, huckleberries, melons, gooseberries, blackberries, peaches, pears, tamarinds, bananas, pineapple, grapes, plums.

FISH.—Anchovy, bass, bluefish, blackfish, cod, eels, crabs, clams, flounders, halibut, herrings, lobster, mackerel, mussels, porgie, prawn, salmon, turtle, trout, sturgeon, whiting, weakfish, rockfish.

VEGETABLES.—Beans, beets, cucumbers, cabbage, carrots, cauliflower, corn, egg-plant, lettuce, onions, parsley, parsnips, potatoes, squash, shallots, spinach, turnips, radish, rhubarb, tomatoes.

PRACTICAL RECIPES.

MULLIGATAWNY SOUP.—Select a good sized fowl and cut it in pieces and break the bones; take a piece of the chicken fat and put it in the soup pot, and when melted add some soup vegetables cut fine and let them cook for a few minutes; then add a couple of pounds of veal cut into small pieces and cook a quarter of an hour longer, then put in the chicken and six quarts of water and let it boil up once, then skim and set back to cook slowly for four hours. Put three table-spoonfuls butter in a pan and when melted add four tablespoonfuls of flour and cook until the flour is brown, then take off the fire and add a tablespoonful of curry powder. Strain the soup, return it to the kettle and add this mixture; cook for a few minutes, then add pieces of the chicken cut into dice; cook for a half hour, then serve.

DRY CURRY OF MUTTON.—Cut the cold boiled mutton into neat sized pieces and make slight incisions in the meat; rub the curry in these, then sautè the meat in a little butter until thoroughly heated.

HAM TOAST.—Put a table-spoonful of butter in a sauce pan, when melted add to it half a cup of cream and the well beaten yolks of two eggs; boil up, stirring well, and add a cup of finely minced cold boiled ham, a little onion juice, and seasoning to taste. Lay some slices of thin toast on a hot platter, pour some of the ham on each and serve.

A CREAM CAKE.—Make a fine five egg cup cake and bake it in a round mould. When done and cold cut off the top of it and scoop out the insides to within a couple of inches of the crust; crumble up the insides of the cake and add to the crumbs a rich custard, made with three eggs to a pint of milk, sweetened and flavored with vanilla, nutmeg and a very little salt; also add a couple of spoonfuls of raspberry jam. Beat these together and fill up the cake with the mixture. Pile whipped cream on top and serve very cold.

SKELETON POTATOES.—Pare some rather long potatoes and with a very sharp knife cut them round and round in spirals, but do not break them. Dry them, and fry in boiling lard; take out, drain, sprinkle with salt and serve.

HORSERADISH SAUCE FOR FISH.—Heat a pint of cream and season it with pepper, salt, and four ounces of horseradish. Pour into a tureen and serve.

LOBSTER BUTTER.—Pound some cooked lobster spawn with the coral of the lobster and some butter until it will go through a hair sieve; season, and serve with fish.

FRIED SALSIFY.—Boil it in water, cut it into short sticks, drain, and let it soak for an hour in vinegar, with salt and pepper. Dip the sticks into a thin batter, fry quickly in dripping, and serve.

BERLIN DOCTORS.—Berlin gives the carriages of physicians the right of way through the crowded streets. The coachmen wear a distinctive white hat.

BECOMING COMMON.—Onyx is in danger of losing its special value. Besides the great deposits discovered in Missouri extensive layers have been found in Smyth County, Virginia.

BRIDGE BUILDING.—The law of the Unted States is that bridges over navigable streams must be built under the sanction of the War Department. The law is to be more vigorously enforced than formerly.

FRANK AND COURTEOUS.—In last week's issue we published under the head "Domestic Dietetics" specially prepared for the *True Democrat;* also "Seasonable Food for July," and several "Practical Recipes." These were clippings from the AMERICAN ANALYST, and that valuable paper should have had the credit. It says so, and I think so too.—Editor *Balt. True Democrat*, July 18.

A NATURAL THERMOMETER.—Anxious mother—"I wish, Susan, when you give baby a bath you would use the thermometer so as to ascertain whether the water is at the proper temperature."

Susan—"Oh, don't you worrit about that, mum; I nade no 'mometers. If the little wan turns rid, the wather's too hot; if it turns blue, it's too could; that's all there is about it."

MRS. ASTOR'S JEWELS.—Mrs. William Astor has a wonderful snake ring which literally writhes in constant motion on her finger. It is constructed of flexible gold wire, each scale being represented by a loop of wire in which a ruby, an emerald or an amethyst is firmly set. The slightest movement of the fingers sets the wire a-quiver, and the ring scintillates and seems to go round and round the finger with a serpentine movement that has something eerie in it. It was made in Egypt. The same lady has a marvelous necklace, composed of six strings of magnificent diamonds, all the stones being invisibly set, so that they look as though they were simply strung together like beads.

LA MANHATTIENNE.

WHY THE NEW YORK GIRL IS THE MOST CHARMING GIRL IN CREATION.

The most predominant characteristic of the New York girl is that she is always there. If it is a new book, she has read it. If it is a new play, she has seen it. If it is a new style of gown, she has it on, and if it is the last new man to whom she has been introduced, he is pleading for an invitation to call on her. She is healthy, because she believes in bathing and plenty of exercise. Her eyes are clear; and if she walks a little too rapidly for absolute grace, you know it is because she has an object in view, and she intends to gain it. She is slightly cynical. She has by no means an abiding faith in men, and she believes that "out of sight out of mind" is usually true as applied to them; consequently she meets them on their own ground, and in her close-fitting tailor-made suit, leaves them victims on the field of coquetry, slain by a determined enemy, and with weapons they don't exactly understand. She is nothing if not good form. She must have a frock fit and fit well, whether it be calico or brocade; but above everything else she puts her faith in the tailor-made frock. The figure of which she is so proud shows well in it, and her trim, well groomed air demands it. She thinks the New England girl tiresome, the western one breezy, and the southern one "a sweet little thing." She cannot understand why women are afraid to cross the street alone, nor why she should be ashamed to go in and get some luncheon and tip the waiter well. She thinks that southern men are magnificent, that western ones swirl one along, and the New England ones are well enough to marry, if they have got money, but are not to be considered unless they have. She belongs to three or four classes, usually speaks French well, and is probably a good performer on the mandolin or banjo. She is straightforward, and yet she fully understands that language was invented to conceal one's thoughts. Her manners are irreproachable. Imitating her English cousin, she has subdued her voice a little, and if she attempts the English drawl she does it in a way rather fascinating. She is interested in no end of charities, and works well for them. She reads most of the novels, a great deal of the poetry, and has an opinion on every subject, from Tolstoi to the best way to mend the thumb of a glove. Take her for all in all she is extremely interesting; she has enough knowledge of the world not to make mistakes when she is in it and of it, and she is enough a true-hearted girl to love her own people, her friends, and to be sympathetic with those who are in sorrow. If she has a fault—and I like her so much that I doubt it—it is that she is a little too sure. She never questions her ability to succeed. She has a bright way of saying "good morning," and an equally bright one of bidding one "good night." The New York girl is a creature not too bright or good, but essentially a clever girl, who has gleaned knowledge from all over the world, and who knows how to use it to the best advantage. Can you ask anything more?—*Ladies' Home Journal.*

PERSPIRATION AND TRANSPIRATION.

If the skin be examined with a powerful magnifying glass it has the appearance of a great sieve whose apertures are of all shapes and sizes. Some are moist from water that slowly oozes outward to the surface. This water, when evaporated on a watch crystal leaves little crystals of salt and ammoniacal compounds. Dried on blotting paper or woven tissue, and left in a close place, it undergoes fermentation and putrefaction, emitting an unpleasant odor. These show that the pure liquid has been used by nature to relieve if not cleanse the blood, to cool off the system, to soften the skin, to force off the dead cuticle, and probably to wash the exterior tissues of the body. In a second class of apertures there is a pale yellowish oil. Sometimes there is more stearine and less oleomargarine in the oil than there should be, and it then becomes almost solid. If dust gets in it is held by the fat, which becomes yellow, brown, and then black. It is then said to be a blackhead. If the grease is too hard, local inflammation sets up, and a pimple or boil results, according to the size of the sac which contains it. Sometimes the outlet to the sac is closed and the inflammation, unable to expel the grease induces the system to reabsorb it. This is a dry pimple, and when superinduced by the excessive use of alcoholic stimulants is appropriately termed a toddy blossom. The oil answers many purposes. It keeps the skin and tissues soft, pliable and smooth; in many cases it acts as a lubricant, and what is too often overlooked by people, it carries with it away from the skin the fine dust always depositing from the air. In addition to these two classes of apertures there is a third, which sometimes seems as an outlet for perspiration, but usually is what may be called an air outlet. These pores act as the escape valves of much larger amounts of gas than is usually supposed. Even when they seem to be filled with perspiration this liquid is full of bubbles, showing that two processes are going on at the same time. In health this complex system is forever at work unnoticed and almost unknown. Its normal activity means strength, comfort and beauty. Increased exertion causes an increase in transpiration, and this in turn relieves the lungs and the heart, and also reduces the temperature, which has been raised above the normal. In ill health all this is changed. In some cases where there is much vitality the skin is reddened and eruptions appear on the body; in others, pimples, boils and abscesses make their appearance, and inflict excruciating agony; in still others there are cold sweats, shivers, fevers and a clammy moist skin, and in others again there comes into being that hideous pallor and bloodlessness which too often indicate deep seated disease, years of intense suffering, and a lingering, painful death. Too much care cannot be taken of the skin in order to avert many of these evils. The body should be bathed in lukewarm water at least twice a week, and then rubbed with a soft towel until it is in a warm glow. So much for the external treat-

Buffalo Lithia Water, Spring No. 2, in Bright's Disease, Gout, Stone in the Bladder, and Diseases Generally of Uric Acid Diathesis, Etc., Etc.

DR. WM. A. HAMMOND, of Washington, D. C., Surgeon General U. S. Army (retired), Professor of Diseases of the Mind and Nervous System in the University of New York, etc.

"I have for some time made use of the BUFFALO LITHIA WATER in cases of AFFECTIONS of the NERVOUS SYSTEM, complicated with BRIGHT'S DISEASE OF THE KIDNEYS or with a GOUTY DIATHESIS. *The results have been eminently satisfactory.* Lithia has for many years *been a favorite with me in like cases, but the* BUFFALO WATER CERTAINLY ACTS BETTER THAN ANY EXTEMPORANEOUS SOLUTION of THE LITHIA SALTS, and is, moreover, better borne by the stomach. I also often prescribe it in those cases of CEREBRAL HYPERÆMIA resulting from OVER MENTAL WORK—in which the condition called NERVOUS DYSPEPSIA exists—*and generally with* MARKED BENEFIT."

DR. WM. B. TOWLES, Professor of Anatomy and Materia Medica, in the Medical Department of the University of Virginia.

"BUFFALO LITHIA SPRINGS, No. 2, belongs to the ALKALINE or, *perhaps, to the* ALKALINE SALINE Class, *for it has proved far more efficacious in many diseased conditions than any of the simple* ALKALINE waters.

"*I feel no hesitancy whatever in saying that in* GOUT, RHEUMATIC GOUT, RHEUMATISM, STONE *in the* BLADDER, and in all diseases of URIC ACID DIATHESIS, *I know of no remedy at all comparable to it.*

"*Its effects are marked in causing a disappearance of* ALBUMEN *from the urine. In a* single case of BRIGHT'S DISEASE *of the* KIDNEYS, I witnessed *decided beneficial results from its use, and from its action in this case I should have great confidence in it as a remedy in certain stages of this disease.* In DYSPEPSIA, especially that form of it in which there *is an excessive production of* ACID *during the process of nutrition*, in some of the PECULIAR AFFECTIONS *of* WOMEN, notably in SUPPRESSION of the MENSES, and in CHRONIC MALARIAL POISONING, etc., I have found it highly efficacious."

DR. G. HALSTEAD BOYLAND, late Professor of Surgery, Baltimore Medical College, late Surgeon French Army (Decorated), Member Baltimore Academy of Medicine, Member of American Medical Association.

"In BRIGHT'S DISEASE of the KIDNEYS, ACUTE or CHRONIC, BUFFALO LITHIA WATER, Spring No. 2, is, in my experience, *without a rival*, whether in the PARENCHYMATOUS form or INTERSTITIAL NEPHRITIS. In cases in which the ALBUMEN in the URINE reached as high as 50 per cent., I have known it under a course of this water gradually diminish and finally disappear, at the same time other alarming symptoms were relieved and the sufferers restored to health.

"In STONE in the BLADDER of the RED LITHIC ACID and the WHITE PHOSPHATIC DEPOSIT, the SOLVENT power of this water is *unmistakable.*"

Water in cases of one dozen half gallon bottles, $5.00 f. o. b. here.

THOS. F. GOODE, Proprietor, BUFFALO LITHIA SPRINGS, VA.

ment. The internal is equally simple, and consists in keeping the bowels open, and stimulating the vital organs by the use of Ayer's Sarsaparilla. This superb compound acts upon the skin by influencing all the forces that control it. It purifies the blood, and so prevents the deposition of the coloring matter, which is so familar in the faces of those who are sallow, grayish, anemic or pimply. It regulates the liver, and so puts an end to the discloration produced by bile, which finds its highest development in jaundice. It acts as a tonic upon the secondary nervous system, and so strengthens those involuntary processes in which the skin plays so large a part. It assists the intestines, and thus remedies constipation on the one side, and dysenteric troubles on the other. In this way it frees the system from all humors and restores it to a perfect condition. With Ayer's Sarsaparilla, accompanied by compliance with the principles mentioned, perspiration and transpiration become normal, and health, strength and a beautiful complexion are the sure results.

Subscription $1.00 per year. Now is the time to subscribe.

Pure is one thing; wholesome, another. Pure arsenic is not wholesome. Pure ammonia, pure white clay, or pure alum cannot make a wholesome baking powder, even if it is called "absolutely pure."

Every housekeeper knows that pure cream of tartar, pure soda, pure flour, are wholesome. These three ingredients, and these three only, are used in Cleveland's Baking Powder. Cleveland's is pure *and* wholesome; it leavens most, and leavens best, but its special excellence is that it is perfectly wholesome.

Fine Table Wines

From our Celebrated Orleans Vineyard.

Groux Barroxthy & Co.

Producers of the

ECLIPSE CHAMPAGNE,

530 Washington St. SAN FRANCISCO.

GENERAL AGENCIES:

NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOSEPH R. PEEBLES' SONS CO., 73 West Fourth Street
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.



On the Ragged Edge

—The clothes that are washed without *Pearline*. If you get them clean by the necessary rubbing with soap, they will soon get ruined by the wear of it.

Pearline saves the wear, by saving the work—there is little or no rubbing. It does no harm to anything. Use *Pearline*, and use less labor. Labor is useless, if you use *Pearline*, for it is unnecessary.

The Edge of despair. The peddlers and prize givers must be there, lest why should they use such methods and claim their goods "the same as," or "as good as" Pearline. IT'S FALSE—Pearline has no equal and is never peddled.

240 JAMES PYLE, New York

BUSINESS NOTES.

FOR SLEEPLESSNESS

Use Horsford's Acid Phosphate. Dr. C. R. Dake, Belleville, Ill., says: "I have found it, and it alone, to be capable of producing a sweet and natural sleep in cases of insomnia from overwork of the brain, which so often occurs in active professional and business men."

CHEERFULNESS DESIRABLE.—Every one knows the advantage of a good bedside manner to the physician. In his chatty address to the students at University College, Sir Edward Quain told how its need was impressed upon him at an early stage of his career. When quite a young man he was placed in temporary charge of a patient, and full of the weight of his unaccustomed responsibility, his countenance grew longer and longer. When he was leaving one day the lady's husband followed him. "I greatly appreciate the anxiety you feel for my poor wife," he whispered, "but please don't let her see it again, for after you had left the room she asked me if you were the undertaker."

INGENIOUS THERMOMETER.—A very sensitive metallic thermometer, with electrical recording apparatus, has been devised by a French mathematician. The thermometer proper consists of a bar of metal firmly fixed at one end, and at the other end joined to a short arm of a lever, the long arm of this lever being attached to another bar. A second bar, connected at its other extremity with a similar lever, operates a pointer working on a dial, which registers in degrees the expansion of the two bars. By suitable electrical attachments the temperature is recorded at any distant point, no matter what the distance. This device is of great value where a constant heat must be maintained in a manufacturing establishment, as the recording of the temperature may be read in the office.

FORESTS AND BACTERIA.—Investigations have been made by Serafini and Arata to determine the correctness of the belief that the foliage of trees has some influence in filtering out the bacterial contents of the atmosphere. Their method of procedure was to determine the number of bacteria in air under motion before and after it had reached the woods. The barometrical pressure, direction and strengh of the wind, temperature at the edge and in the midst of the woods, humidity and rainfall, were all taken into consideration. As the number of observations were only 40, the investigators give the results with some reserve, nevertheless they believe that they are justified in affirming that forests do exercise the power of straining out the bacteria that are brought to them by the wind.

THE "TIP" FRAUD.—Brussels, at the time of writing, is threatened with a strike of waiters. It is novel in this respect, that it may be described as a strike against "tips." Whether the Belgian public is more generous than other publics, or not, we are not aware; but it seems certain that the proprietors of Brussels restaurants and taverns are more wily than others. In the first place, they make their waiters spend the early morning in cleaning the establishment in which they serve, and then they demand of the unfortunate men from 1½f. to 6f., according to the class of establishment, out of the *pour-boires* given to the waiters by the customers, and which constitute the sole emolument of the former. Hitherto the public does not seem to have been aware that, by giving the obligatory *pour-boire*, they have really benefited the proprietors rather than the hard-worked waiters. The latter in self-defence, now suggest the entire suppression of the *pour-boire*, and the substitution of a fixed salary. The demand seems not only a just, but an eminently business-like, one, for the system of payment by "tips" is never really satisfactory or advantageous to anybody.

25 CTS PISO'S CURE FOR CURES WHERE ALL ELSE FAILS. Best Cough Syrup. Tastes good. Use in time. Sold by druggists. CONSUMPTION 25 CTS

Armour's Extract of BEEF.

The best and most economical "Stock" for Soups, Etc.

One pound equals forty-five pounds of prime lean Beef.

Send to us for our book of receipts, showing use of **ARMOUR'S EXTRACT** in Soups and Sauces.

ARMOUR & CO., Chicago.

WATCHES.

EVERY one wants a watch, and naturally a good watch that keeps accurate time, presents a handsome appearance, and is inexpensive. If such a watch can be found of American manufacture, it is an additional appeal to our patriotism. Just such a watch as this ideal THE ANALYST PUBLISHING COMPANY is enabled to offer as a Premium to its readers. Having some large advertising contracts we have been enabled to procure the movements of the manufacture of the best known American watch factories, namely, the Waltham, Elgin, Hampden and Illinois Watch Companies. These movements are adapted for both ladies' and gentlemen's watches, and are warranted by the makers. These movements have seven jewels, patent lever movement, chronometer balance, patent safety pinion, sunk hard-enameled dial, straight line visible palette, stem winders, hand set; in fact, contain all the latest improvements and can be readily cleaned or repaired by any ordinary good watchmaker. They can be regulated to run as close as any movement.



It is needless to say that to case these movements in solid gold cases would make them too expensive, yet they are cased in what are known as gold filled or stiffened "Ladd" cases, and are warranted to be 14 karat gold, made from two sheets of 14 karat gold overlaying fine composition metal, with regular jointed caps, covers and bezels, and to wear at least five years. They are not plated, nor rolled gold, but actual 14 karat gold cases, thin of course, but stiffened and strengthened by being filled with this fine composition metal. They are finished in the same manner, engine turned and engraved as solid gold watches, and wear and look just the same. No one but an expert can tell them from a solid gold watch. These watches are made both open face and hunting case style, in gentlemen's or ladies' sizes. For gentlemen we recommend plain engine-turned cases; for ladies, a handsomely engraved case.

How to Obtain One of these Watches.

These watches are not to be purchased from us at any price. Send us a club of 25 subscribers to the AMERICAN ANALYST, and $25, the regular subscription price, and one of these watches (your choice of style and size) will be immediately forwarded, post-paid and registered, to your address. You need not wait until you have your 25 subscribers all together, but forward them as you get them and they will be credited to you, and when the number is complete the watch will be sent. A subscription for two or three years will be counted as two or three subscribers.

As these watches are retailed by jewelers at not less than $25, it will be seen that we are offering a real premium with the sole object of increasing our circulation, and that by taking advantage of our offer any one can obtain a good, reliable and handsome watch without cost. As the number of these watches at this price is limited, it is advisable to take steps at once to procure a bargain.

THE ANALYST PUBLISHING CO., 19 PARK PLACE, NEW YORK.

BICYCLES

GIVEN AWAY TO BOYS AND GIRLS!

AN OPPORTUNITY OPEN TO ALL.

The Analyst Publishing Company being desirous of largely increasing their subscription list, will furnish every one with a beautiful Safety Bicycle, ABSOLUTELY FREE, in return for a few hours' canvassing.

To every boy and girl who secures 75 subscribers for the American Analyst at $75, we will give a splendid

$40.00

NONPAREIL

SAFETY BICYCLE.



These bicycles are adapted in size to boys, but are strong enough to carry a man. A boy's bicycle should be a strong one. They are manufactured by the OVERMAN WHEEL CO., the makers of the celebrated VICTOR Bicycle, and have the full guarantee of the makers.

The following is a brief description of the NONPAREIL SAFETY; 26-inch wheels; ball bearing all around, including pedals; solid crescent rims; double tangent spokes; three-fourths inch tires; cranks, three throw, $4\frac{1}{4}$ to $5\frac{3}{8}$ inches; guards to both wheels; tool-bag, oiler and wrench. Finished in bright enamel, all exposed metal heavy nickel-plate on copper.

In selecting these machines as a premium, we have disregarded cheapness and selected a Bicycle which is serviceable, and the makers of which have an established reputation for building the best Bicycle that money, machinery and brains can produce. We are actually furnishing the Bicycles and Papers at less than cost, but hope by stimulating active and successful canvassing, and thus enlarging our subscription lists, to make an eventual profit. We positively guarantee these bicycles to be just as here represented. They will be shipped by express f. o. b. in New York.

Subscription orders must be made out plainly and legibly, and sent as fast as secured, addressed to

THE ANALYST PUBLISHING CO., 19 Park Place, New York.

CONFEDERATE MONEY.

Warranted Genuine and in Good Condition.

We are extensive dealers in Confederate Money—rare relics of our late civil war; also Bullets, Cannon Balls, etc. We want agents in every city North to sell these mementoes, and we will pay agents handsomely to sell our goods. We will furnish the money to those desiring at the following retail prices: Shinplasters, 10, 25, 50 and 75 cents each, or the entire set 50 cents. Complete sets, consisting of $100, $50, $20, $10, $5, $2, $1, 50c., $1 per set. $500 bills, $2 50 each. $100 bills, 15 cents, or two for 25 cents. $50 bills, 10 cents, or two for 15 cents. $5 and $20, 5 cents each. 50c., $1 and $2, 25 cents each. Inquirers enclose stamp for reply.

Publishers of SOUTHERN AGENT, Atlanta, Ga.

LITTLE BOYS AND GIRLS

MAKE EASILY $2 A DAY.

Write for particulars. Address

BARKER PUBLISHING COMPANY, Atlanta, Ga.

$5, $10 and $20

CONFEDERATE BILLS,

only five cents each. AGENTS WANTED.

SOUTHERN STAR, Atlanta, Ga.

The Old Doctor's Book of Secrets.

Tells everything! Over 400 pages, closely printed, with illustrations. Contains medical receipts and prescriptions, and much valuable information all young men should know. Sent securely wrapped in plain wrapper, postage prepaid, to any address for $1.00.

(Send for it. One receipt alone may save you many times its cost.)

EUREKA PUB. CO., Box 441, Chicago.



DETECTIVE! WE WANT A MAN IN every **locality** to act as **Private Detective** under our instructions. Send stamp for particulars.

WASHINGTON DETECTIVE AGENCY,
Box 787. Washington, Iowa.



We Can Save You——
Fifty Dollars When You Build. *

If you are thinking of building a home, here is an opportunity to secure one or several designs of houses which will aid you in deciding just what you want.

PLANS READY TO BUILD FROM

ONLY 25 CTS. EACH

Or Five Sets for One Dollar.

The designs given below to select from are practical and are drawn to a large scale by Geo. O. Garnsey, architect for THE NATIONAL BUILDER. Each one consists of a large, beautifully colored picture of a front elevation, including the floor plans, the details, the specifications, and carefully prepared estimates of cost, and all ready to build from. By a special premium arrangement we are enabled to sell these plans at the above extremely low price. **Specify number of Design.** Send all orders to

THE ANALYST PUBLISHING CO.,

No. 19 PARK PLACE, NEW YORK CITY.

No. 2. **Clover Cottage.** Neat, cosy and modern. Cost, $1,960.

No. 3. **6-Room Elegant Brick Residence.** Suitable for city or country; Handsome Front, Good Basement, etc. Cost, $3,500.

No. 4. **6-Room Modern Residence.** Handsome Front, with broad circular Veranda. Cost, $3,000.

No. 5. **Cheap 5-Room Genteel Cottage:** With Reception Hall, 9x12, and good Basement. Cost, $2,000.

No. 6. **8-Room Residence.** Handsome Front, neat Porch, etc. One of a series of residences much in demand. Cost, $3,000.

No. 10. **Bank and Store Fronts.** Showing different styles of Show Windows, and highly Ornamented Fronts. Two designs. Cost, $1,613 and $1,325.

No. 17. **Double City Flat Building.** Six rooms in each flat; building adapted to narrow lot. Ornamental, Romanesque Front. Cost, $10,000.

No. 19. **Queen Anne Cottage, Eight Rooms.** Good light; exhibiting good effect. Cost, $4,000.

No. 21. **Maplewood Cottage, Three Rooms.** Abundance of piazza. Very neat and convenient. Cost, $1,000.

No. 22. **Hyacinthe Cottage, Three Rooms.** Very odd and pleasing. Cost, $750.

No. 23. **Clovernook Cottage.** New in style. Cost, $750

No. 25. **Clapboard Cottage, 8 Rooms.** Neat Modern Frame. Cost, $1,875.

No. 26. **Pebble Stone Cottage, Six Rooms.** This design is handsome. Cost, $2,575.

No. 38. **Cheap City House, Eight Rooms.** Suited for inside lot; nicely laid out. Cost, $2,600.

No. 40. **Charming Suburban Cottage of Five Rooms.** Very roomy and convenient. Cost, $2,500.

No. 42. **Beautiful 6-Room Cottage.** Handsomely designed; all modern improvements. Cost, $3,100.

No. 49. **Neat Village Church.** Seating capacity about 600. Cost, $7,500.

No. 50. **Store and Office Building.** Brick; 2 stores and 8 offices. Very handsome. Cost, $7,000.

No. 51. **Modern Suburban Residence of Nine Rooms.** Beautiful design. Cost, $2,100.

No. 57. **Rosedale Cottage, 3 Rooms.** With Bay Window, Frame. Cost, $1,000.

TABASCO PEPPER SAUCE;

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced by connoisseurs to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY'S SON,

NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

THE

New Mode

"HALL"



A Perfect Typewriter. Best Manifolder. Terms to Agents Liberal. Portable. Inexpensive. Writes All Languages. *Read Mr. Howell's Opinion.*

"I wish to express my very great satisfaction with the Hall typewriter. Impression and alignment are both more perfect than any typewriter that I know, and it is simply a pleasure to use it. It is delightfully simple and manageable."

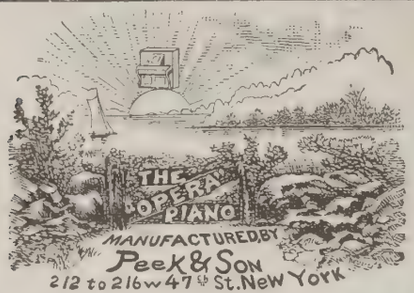
(Signed) W. D. HOWELLS.

Send for Catalogue and Specimens of work.

Address N. TYPEWRITER CO., 10 Temple Pl., BOSTON.

HARTSHORN'S SELF-ACTING SHADE ROLLERS

NOTICE SCRIPT NAME OF Stewart Hartshorn ON LABEL, AND GET THE GENUINE HARTSHORN



A HIGH-GRADE PIANO

AT A VERY MODERATE PRICE.

NEW DESIGNS. FANCY WOODS.

Terms Easy. + Monthly Instalments.

TWO, THREE AND FOUR PEDALS.

Catalogues, Prices, Terms, Etc., sent to any address.

EVERY PIANO WARRANTED 5 YEARS.

(Mention this Paper.)

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,

HOWARD STREET. BOSTON, MASS.

GOLD MEDAL, PARIS, 1878.



W. BAKER & Co.'s Breakfast Cocoa

from which the excess of oil has been removed,

Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

"BILLET"

are

Carefully Selected French Sardines, Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

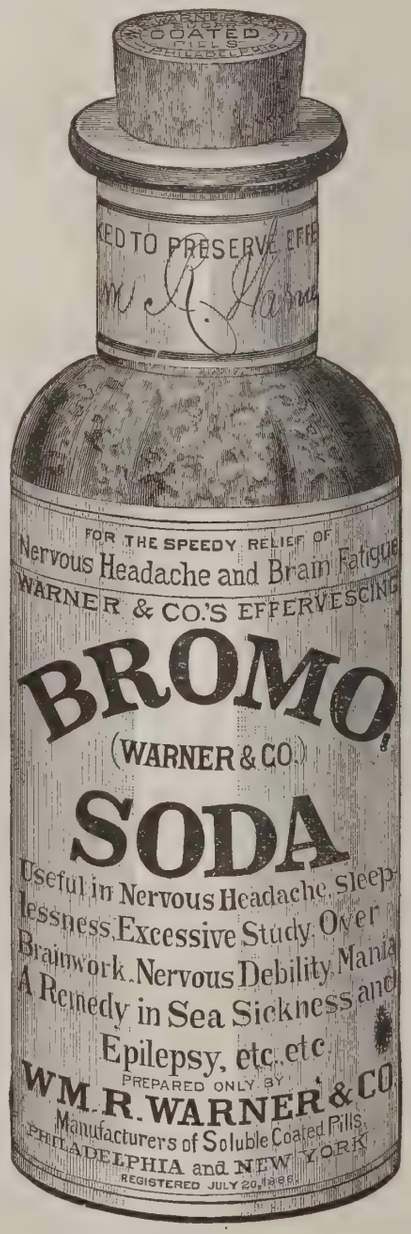
FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

BROMO SODA.

Useful in Nervous Headache, Sleeplessness, Excessive Study, Over Brainwork, Nervous Debility, Mania, Etc.

DOSE—A heaping teaspoonful in half a glass of water, to be repeated once after an interval of thirty minutes, if necessary. Each teaspoonful contains 30 grs. BROMIDE SODIUM and 1 gr. CAFFEIN.



SUPPLIED BY ALL DRUGGISTS

Ask for (Bromo-Soda, Warner & Co.) and take no other "Bromo."

RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R W ROBINSON & SON,
184 Greenwich St., N. Y.

HAMMOND'S
CELEBRATED
Calumet Oleomargarine

Strictly pure, cheap and healthful.
Ask your grocer for it.
Put up in packages of all sizes, also prints and rolls.

C. H. HAMMONDCO.,
607 to 615 THE ROOKERY,
CHICAGO.

Also offices at Boston, South Omaha, Neb., and Hammond, Ind.

BLAIR'S PILLS.



Great English Remedy for GOUT, RHEUMATISM and KIDNEY COMPLAINTS.
SURE, PROMPT and EFFECTIVE.
Large Box, 34; Small, 14 Pills.
At all Druggists, and
224 WILLIAM STREET, NEW YORK.

Pure LAGER BEER,
"IMPERIAL" and "CULMBACHER"
Brewed & Bottled
SPECIALLY FOR
HOTELS, CLUBS
AND
PRIVATE FAMILIES
BY
Beadleston & Woerz
291 W. 10th St. New York.
Orders by Postal Card promptly attended to.

SWIFT'S
CHOICE
Chicago Dressed Beef
AND
MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,
UNION STOCK YARDS,
CHICAGO, ILLS.

PUBLICATIONS OF THE
ANALYST PUBLISHING CO.

THE AMERICAN ANALYST.
Weekly. Every Thursday. $1 per year.

THE ROOFER, TINNER AND SHEET-IRON WORKER.
Monthly. 15th each month, $1 per year.

THE LEATHER MANUFACTURER.
Monthly. 1st each month. $3 per year.

Reliable agents and representatives wanted everywhere on liberal terms. Address
ANALYST PUBLISHING CO.
19 PARK PLACE, NEW YORK.

ESTABLISHED IN LONDON, 1831.
DEAN'S PATENT
Ardenter Mustard



W. G. DEAN & SON,
361 & 363 WASHINGTON STREET; 84, 86, & 88
NORTH MOORE STREET, N.Y.

We can save you Fifty Dollars when you Build. See



A complete set of Plans to build from, simply state about price of dwelling desired. 25 cts. in stamps. Our book "Beautiful Homes." 25 cts. Our monthly book "The National Builder," 25 cts. Address
The National Builder, Adams Exp. Bldg., Chicago, Ill.

Subscriptions $1 per year. Now is the time to subscribe.

WHAT A DIME WILL DO!

Every BOY and GIRL who loves to read splendid Stories, Sketches and beautiful Poems, should subscribe for the AMERICAN YOUNG FOLKS, a beautiful Illustrated Monthly Magazine, established in 1875. Its stories are the Very Best that can be obtained from the Foremost Writers of Juvenile Literature, and every issue is filled with good things. The regular subscription price is $1.00 a year, but if you will **Cut this out** and return it to us with **a Silver Dime** and your name and address, we will send you the Magazine Six Months on Trial. Address,
AMERICAN YOUNG FOLKS, Manchester, N. H.

THE ORIGINAL AND GENUINE
(WORCESTERSHIRE SAUCE).
LEA & PERRINS' SAUCE



In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—
Lea & Perrins
Beware of Imitations; see that you get Lea & Perrins'
For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.
JOHN DUNCAN'S SONS, NEW YORK.

DO YOU KNOW THE **DANGER** OF USING SOAP?

IF YOU ARE GOING TO THE COUNTRY, DO NOT FAIL TO READ THE FOLLOWING.

We do not mean soap made from proper material; and when we tell you that about ninety-nine per cent. of Toilet Soap is made from refuse fats gathered from tenement houses, hospitals, butcher shops, and from cattle dying of disease or during transportation, you will, we believe stop and think. Putrefactive changes have taken place in most of this material, as it is mixed with lean meat, blood, bones, sinews, etc. There is at least *one* soap that is made wholly from vegetable material—OLIVE and PALM OILS—and that is

VELVET SKIN SOAP.

It will keep the skin soft and in a healthy condition, as no animal fats are used in its manufacture. Nothing in one's personal outfit is quite so satisfactory as a thoroughly reliable Toilet Soap.

We are confident that a trial of this article will insure its continued use. If the dealer does not keep it, do not take any other, but require him to order it for you, which he can do readily. **Otherwise, send to us direct.**

MANUFACTURED BY

REED & CARNRICK, Manufacturing Chemists,

447 GREENWICH STREET, NEW YORK.

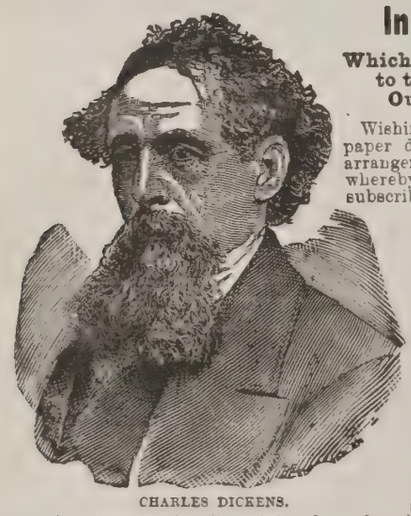
GRAND PREMIUM OFFER!

A SET OF THE

WORKS OF CHARLES DICKENS,

In Twelve Large Volumes,

Which we Offer with a Year's Subscription to this Paper for a Trifle More than Our Regular Subscription Price.



CHARLES DICKENS.

Wishing to largely increase the circulation of this paper during the next six months, we have made arrangements with a New York publishing house whereby we are enabled to offer as a premium to our subscribers a **Set of the Works of Charles Dickens, in Twelve Large and Handsome Volumes,** with a year's subscription to this paper, for a trifle more than our regular subscription price. Our great offer to subscribers eclipses any ever heretofore made. Charles Dickens was the greatest novelist who ever lived. No author before or since his time has won the fame that he achieved, and his works are even more popular to-day than during his lifetime. They abound in wit, humor, pathos, masterly delineation of character, vivid descriptions of places and incidents, thrilling and skillfully wrought plots. Each book is intensely interesting. No home should be without a set of these great and remarkable works. Not to have read them is to be far behind the age in which we live. The set of Dickens' works which we offer as a premium to our subscribers is handsomely printed from entirely new plates, with new type. The twelve volumes contain the following world-famous works, each one of which is published *complete, unchanged, and absolutely unabridged:*

DAVID COPPERFIELD,
MARTIN CHUZZLEWIT,
NICHOLAS NICKELBY,
DOMBEY AND SON,
BLEAK HOUSE,
LITTLE DORRIT,
OUR MUTUAL FRIEND,
PICKWICK PAPERS,
BARNABY RUDGE AND CHRISTMAS STORIES,
OLIVER TWIST AND GREAT EXPECTATIONS,
THE OLD CURIOSITY SHOP AND THE UNCOMMERCIAL TRAVELER,
A TALE OF TWO CITIES, HARD TIMES AND THE MYSTERY OF EDWIN DROOD.

The above are without question the most famous novels that were ever written. For a quarter of a century they have been celebrated in every nook and corner of the civilized world. Yet there are thousands of homes in America not yet supplied with a set of Dickens, the usual high cost of the books preventing people in moderate circumstances from enjoying this luxury. But now, owing to the use of modern improved printing, folding and stitching machinery, the extremely low price of white paper, and the great competition in the book trade, we are enabled to offer to our subscribers and readers a set of Dickens' works at a price which all can afford to pay. Every home in the land may now be supplied with a set of the great author's works.

GLENN'S SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,

C. N. CRITTENTON,
115 FULTON STREET,
NEW YORK.

Be progressive and keep abreast of the times. Avoid dyspepsia by using **Lard Compound** and **Cottolene,** a substitute for lard.

The highest medical authorities pronounce them healthful; and expert cooks commend them.

Our **Clairette** brand of cotton oil soap is the purest and best laundry soap in the market; as pleasant to the hands as genuine castile.

N. K. FAIRBANK & CO.,
CHICAGO AND ST. LOUIS.

OUR GREAT OFFER

TO SUBSCRIBERS

TO THE

AMERICAN ANALYST.

We will send the **ENTIRE SET OF DICKENS' WORKS,** *in* **TWELVE VOLUMES,** *as here described, all postage prepaid by ourselves, also* **THE AMERICAN ANALYST** *for* **ONE YEAR,** *upon receipt of* **$1.50,** *which is only* **50** *cents more than the regular subscription price of this paper.* Our readers, therefore, practically get a set of Dickens' works in twelve volumes for only **50** cents. This is the grandest premium ever offered. Up to this time a set of Dickens' works has usually been $10.00 or more. Tell all your friends that they can get a set of Dickens' works in twelve volumes, with a year's subscription to **THE AMERICAN ANALYST** for only **$1.50.** Subscribe now and get this great premium. If your subscription has not yet expired, it will make no difference, for it will be extended one year from date of expiration. We will also give a set of Dickens', as above, free and post-paid, to any one sending us a club of three yearly subscribers.

ADDRESS:

THE ANALYST PUBLISHING CO.
No. 19 PARK PLACE,
NEW YORK.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 36. NEW YORK, THURSDAY, SEPTEMBER 3, 1891. WHOLE No. 236

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - $1 per year.
Single Copies, - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.
Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.
Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,

H. LASSING, M. D., } Editors.
T. P. McELRATH, }

No. 19 Park Place. New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

Acoustic Thermometer 423
Arsenic 425
Artificial Pearls 422
Cheap Soaps 422
Domestic Dietetics 427
Editorials 421
Whom do we Reach? Magnetic Sunlight; Universal Standards.
Evolution 427
Gutta Percha 423
Lunar Lore 424
On the Scent 424
Schizomycetes 425
The Chair-Maker 426

WHOM DO WE REACH?

We have often been asked the question, Is the ANALYST a chemical paper? Of course we have answered that it is not. A chemical paper, unfortunately, cannot be made self-supporting in these days. Then why do we call this journal the AMERICAN ANALYST? One answer is that it was so called in the beginning, and after a seven years' existence it would hardly do to change the name; but a further and better reply would be that, because the paper is called the AMERICAN ANALYST, it does not follow that it must be a chemical paper. The word analyst does not mean specifically one who makes a chemical analysis, but has a much broader meaning. The definition given by the best lexicographers is one who analyzes or who is versed in analysis, in any application of the word. The true definition of analysis is a dissolving, a resolution of a whole into its parts, solution of a problem, literally a loosing, resolving into its elements, undo, the resolution or separation of anything which is compound, as a conception, a sentence, a material substance or an event, into its constituent elements or into its causes. It is therefore clear that this paper is well named, though the name having been popularly applied exclusively to a chemist making chemical analyses, has led to a mistaken conception of the mission of this journal. As has been stated in a previous issue, we began our mission as an advocate of pure food and an opponent of sham products. In that field we have achieved great success, only one but marked evidence of which is found in the innumerable libel suits we have had to defend, and we say it with pride, successfully, having been in every instance sustained by the courts. We still continue our warfare against all shams and frauds, cooperating regularly with the various Boards of Health, national, State and municipal, to secure sanitary and food reforms through organized efforts, and it is conceded to be the only popular medium through which those bodies can bring their purposes and action intelligently before the general public. Reaching as it does all classes—manufacturers, merchants, physicians, chemists, and private families—all over the land, its influence is exerted over a vast radius, producing results as visibly marked as they are wide-spreading. The scope of this journal, however, is not limited to the missionary work above described. Its varied contents cover almost the entire field of scientific as well as social progress, and each yearly volume constitutes a compendium of current facts in nearly every department of knowledge such as can nowhere else be obtained in such comprehensive shape and so cheaply. We hope that we have made our position clear, and that hereafter we may not labor under the disadvantage of being judged by our title as a paper for chemists only, but that we shall be known as a paper for every intelligent reader.

MAGNETIC SUNLIGHT.

At the session, in Washington, D. C., on August 21st, of the American Association for the Advancement of Science, Professor Bigelow of Washington exhibited and explained before the mathematical and astronomical section a new scientific instrument called the aurora-inclinometre. Prof. Bigelow has been working for some years on the problem of the physical interactions between the earth and the sun, aside from those due to gravitation. Several important discoveries have already been made and a new field of investigation opened to science. It has been found that the same law which underlies the working of electricity and magnetism is operating on the sun, and gives the beautiful curves of the corona which are seen at the times of total eclipses. This corona is like the aurora, and is confined to a narrow belt in each hemisphere of the sun. Prof. Bigelow has recently discovered the causes of terrestrial magnetism and the variation of the magnetic needle all over the earth in periodic motions. It seems that the sunlight is also a magnetic field, and that the magnetized earth rotates in it, just like the armature of a dynamo. By a sort of magnetic refraction the rays of force enter the dark side of the earth in peculiar curves, pass through it in straight lines, and emerge in similar curves on the sunny side of the earth, turning all the needles in a corresponding way. Now the aurora marks the pathways by which these forces enter and leave the earth, or the modifications that are produced by them, or the ordinary magnetic field surrounding the earth, due to its permanent magnetism, and it therefore becomes essential to study carefully the data that they can give. Much study has been given to the aurora, but not along this line, for which also Prof. Bigelow has given the theory. Those three subjects, the corona, the aurora, and terrestrial magnetism, form one grand scheme and depend upon one law, the inverse of Newton's law of gravitation. To test the aurora a new instrument has been planned by Prof. Bigelow. It was constructed by the United States Coast end Geodetic Survey, and they have made it a model of beauty and efficiency. It will be sent to Alaska this autumn, where the aurora is seen in the best conditions.

UNIVERSAL STANDARDS.

The Geographical Congress recently in session at Berne, Switzerland, recommended the universal adoption of the metric system and also of the Greenwich meridian for the reckoning of time and longitude. The latter recommendation, however, is not likely to be universally adopted. Some time in 1884, it will be remembered, an international conference assembled at Washington with special reference to this same subject. The proposition, however, was not adopted as several of the delegates headed by those representing France rejected it, and their respective countries sustained them, so that the whole matter is left now where it was then. Besides, the persistent connection of this question with the metric system, which was apparent in the Berne Congress, taking the form there of a resolution that Great Britain ought to adopt that system, appears to be a fatal obstacle to establishing a universal first meridian. Great Britain with her enormous preponderance of maritime interests, supported by various other important maritime nations, could not give up the Greenwich prime, now used by a vast majority of the world's shipping. Since it is simply a matter of general convenience and utility for other nations to conform to this, it is strange to demand as the price of such conformity a complete revolution in the British system of measurements. Should that ever be effected, it would be on its intrinsic merits, and not for the purpose of procuring conformity to the English prime meridian, which is a matter that concerns the interests of other countries much more than those of Great Britain.

ARTIFICIAL PEARLS.

GEMS OF OCEAN MADE TO ORDER OF ANY SIZE.

A process for making real pearls by artifice is, according to Rene Bache, the basis of an application for a patent newly filed by an ingenious person who expects to find in his invention a source of wealth compared with which Monte Christo's means were poverty. The material of which pearls are composed is cheap enough. Take the shell of a pearl oyster and remove by grinding or with acid the rough outer coat. What have you left? A sheet of perhaps an eighth of an inch in thickness of pure pearl—the precise substance which the bivalve deposits around any foreign body, like a grain of sand or occasionally a little fish, that gets caught under its mantle, thus producing the pearls of commerce. Why not take this sheet of nacre dissolve it in acid, and then redeposit the pearl in layers about a buckshot suspended in the solution, thus imitating as nearly as possible the method of nature? If it were practicable to make pearls at all in this way, perfect ones could be formed every time, of any shape desired. There would be no difficulty in turning them out as big as billiard-balls. The trouble is that the concretions thus obtained would be mere lumps of carbonate of lime, lacking entirely the irridescence which in the pearl is due to structure. It is claimed, however, by this inventor that he has overcome the difficulty, so as to be able not only to manufacture pearls, but also to plate articles with the material, as forks and spoons are coated with silver. Conchologist Dall of the Smithsonian Institution, speaking about the practicability of pearl manufacture, exhibited a very remarkable treasure. It was a pearl as big as a pigeon's egg, of a most exquisite rose color, and the receptacle containing it was the fresh-water mussel wherein it had been originally formed. Explanation was made that the nucleus of this incomparable gem was nothing more nor less than an oval lump of beeswax, which had been placed a few years ago between the valves of the mollusk. To protect itself against irritation by this foreign body, the animal surrounded it with the pink nacre it secreted for lining its shell, thus transforming the bit of wax into an ornament fit for a royal crown. The mussel which produced this thing of beauty grew in an Ohio River and was kept in an aquarium while performing its unwilling task. It is a species of bivalve plentiful in streams all over the United States, and there is no reason whatever why anyone cannot make pearls in this way by keeping a few "unios," as they are called, in a tank at home. Care should be taken to introduce the intended nuclei well under the mantle of the fish, not making them too large, because an object the size of a pea will acquire a thickness of nacre much more rapidly than if there is a greater surface to be covered. The most beautiful mother-of-pearl, unless that of the abalone be excepted, is obtained from the nautilus, which is a cephalopod and related to the cuttlefish. Occupying only the mouth of its dwelling, the latter is composed of a series of empty chambers, each of which the animal has successively lived in and vacated as it grew bigger, building up behind it at each move a wall of purest pearl. These vacant rooms of pearl are all connected by a pneumatic tube, which enables the creature to so control the air supply in its house as to make the domicile lighter or heavier at will, in order to ascend or descend in the water. The shell is too thin to bear grinding, and so muriatic acid is used to remove the outer coat and disclose the exquisite nacre beneath. A method of treating such shells consists in drawing upon them with a brush and wax varnish any designs desired, after which they are placed in a bath of weak acid. The latter eats away the outer coat wherever it is not protected by the varnish, the result being a lovely cameo with raised figures in white on a pearly ground. Nature, however, beats Art hollow at this sort of work. In the cretaceous epoch, hundreds of thousands of years ago, there lived certain cephalopods, since extinct, which science calls "ammonites." The pearl they produced was a wonderful beauty, and many fossil ammonites dug up to-day have been so operated upon by the processes of decay as to form elaborate patterns on the shells in pearl and white. No artificial work can compare with the rainbow-hued richness of these relics of the past, reminders of that strange age when oysters and other mollusks had a more important place in creation than they now possess. Apparently, Nature does not make pearl for decorative purposes, else it would not always be on the inside of shells and hidden beneath an ugly coat of lime. The object for which it is intended is evidently to afford a smooth and comfortable dwelling for the soft animal within. The color of the nacreous deposit varies very much. Thus pearls themselves are white, black, blue, purple, pink, and even rarely green. Among the most valuable ones are the rose-tinted pearls produced by a species of couch found in the neighborhood of the West Indies. A single oyster may produce at the same time both white and purple pearls, according as the object enveloped in nacre is situated beneath a portion of the mantle which secretes the corresponding color. Concretions of peacock-hued material are sometimes found in the abalone, which fetch high prices as pearls. It is estimated that no less than $200,000 worth of abalone shells are shipped from the Pacific coast annually, the wholesale price being from $500 to $700 a ton. The finest pearls of the world come from the Persian Gulf, where the oyster beds produce $2,000,000 worth per annum. Because the divers are of rather light complexion, they blacken their bodies, so that they may not be seen so readily by the sharks. In the Sulu Sea women do the diving for pearls and prove very efficient in the work. It is their task to dive for crabs and other sea delicacies which the men folks like, and thus they have plenty of practice. It is here that the finest pearl shells are found, some of them measuring a yard across when opened. The pearl fisheries of Ceylon belong to England, the natives being employed to gather them on a basis of shares in the result. All sorts of superstition prevail among them, and a large business is done by sorcerers who sell charms to restrain the appetite of the sharks and to drive away the diabolical stingrays. Another peril which the diver dreads more than either stingray or shark is the giant clam that weighs nearly half a ton when full grown. It will snap off a man's leg like a pipe stem, if the victim chances to thrust a limb between its open jaws, or at all events will hold him until he drowns miserably. The average diver thinks it a fair day's work to secure one hundred pearl oysters in fifty feet of water. After being taken ashore, the mollusks are allowed to die when their shells open of their own accord. The pearls are classified by passing them through a series of sieves which assort them into different sizes. Those which are very small or defective are sold to make a preparation for sore eyes and nervous complaints that is very popular in the East. Gilded youth in India make it their fad to mix powdered pearls instead of lime with the betel nut they chew. In Saxony pearl mussels are carefully opened and examined upon being taken out of the water, without injuring them, special instruments being used for the purpose. Those which are found not to contain pearls are restored to their native element. It is only in the Gulf of California that regular diving gear is employed in connection with the pearl fishery. The beds there were pretty nearly destroyed one hundred and fifty years ago, when from three hundred to five hundred pounds of pearls were taken from them yearly. The latter were packed on mules and literally sold by the bushel. The most beautiful pearl in existence is "La Pellegrini," at present exhibited in a museum at Moscow. It is perfectly spherical, and so brilliant and pure as to appear almost transparent; weight ninety grains. The imperial crown of Austria contains a pearl of three hundred carats; but the biggest one in the world is the "Hope Pearl," now in London, which weighs three ounces and measures two inches in length, its estimated value being $60,000. There is a pearl in the Spanish regalia weighing four hundred carats; it was obtained from the Gulf of California. Green pearls come from the Marianne Archipelago. Two big ruby-red pearls were found at the Ceylon fishery ten years ago, and are owned by the rajah of the Sulu Islands. Pearls are very perishable. Great quantities of them have been found in old Indian mounds and tombs, showing that the savages did anciently appreciate their beauty, but they were so decayed as to be entirely worthless. Pearls should never be put into greasy or soapy water, nor should any fruit acid be permitted to come into contact with them. They can be kept best in magnesia. It was believed in early times that hollow pearls were caused by the oyster's taking fright at thunder when in the act of conceiving them. It is perhaps to be regretted that the story of Cleopatra's dissolving a great pearl in vinegar and drinking the mixture must be set down as mythical. It would take a very long time for vinegar to dissolve a big pearl, and any acid strong enough to dissolve it quickly could not be drank. Doubtless Egypt's fair queen had a great many huge pearls. One of them is said to have been sawn in two, the halves being used as pendants for the ears of the Capitoline Venus. What are known as "Roman pearls" are made by lining globules of glass with a substance derived from fish scales, which owe to it their irridescence.

RENE BACHE.

CHEAP SOAP.

A WORD OF CAUTION TO THE TRAVELING COMMUNITY.

"There are a good many thousands of professional traveling men in this country, and at least one in fifty of them has an affection of the skin of a more or less serious character," said a well-known dermatologist of this city. "The origin of these cases of skin disease may almost invariably be traced to hotel soap. Every person who has been a hotel guest, no matter where, is familiar with the much-worn and razor-edged cake of soap that lies in wait for him on the washstand in his room—sometimes in a not over-clean soap dish and frequently glued to the cover of the stand where the last occupant of the room, in his haste, permitted it to repose, the chambermaid not having disturbed it. Now you haven't the slightest idea in the world who the gentleman was who used that soap last, and singularly enough, few men, even the most fastidious, ever give the matter a thought. It would be an easy-going individual indeed, though, and one with phenomenal indifference to considerations of cleanliness, who would for a moment think of using a towel that showed signs of having done even the slightest service for the previous occupant of a hotel room; but instances are rare when the same guest will hesitate to use the soap he finds in the same room, although it may yet be damp and sticky from the part it took in the ablutions of the last person who used it. The traveling man does not stop to think that the hotel soap is unexcelled as a medium for the conveyance of cutaneous maladies from one person to another and frequently distributes diseases of the skin that are most difficult of eradication. The person who has occasion to stop at hotels, whether habitually or only occasionally, is not wise if he does not carry and use his own soap. If he is thoughtless enough to use the stock soap of the hotel rooms, wherever they may be, he deliberately courts the contracting of what may be a most distressing and offensive malady."

INDIAN ILLUMINATION.—Petroleum superseded vegetable oils for lighting purposes in India, and is being gradually driven out itself by the electric light, owing to the peculiar fitness of the latter for use in hot climates.

ACOUSTIC THERMOMETER.

TAKING THE TEMPERATURE BY TUNING-FORKS.

Perhaps some of our readers would hardly have suspected that there exists any connection between acoustics, or the science of sound, and the science of heat; but we would remind such that there is a general harmony amongst all the laws of the sciences, and as regards the phenomena which they govern, it must be remembered that they are all manifestations of the same "something," which we call energy. Sound and heat are surely not more widely different than are mechanical work and electric light, yet how easy it now is to obtain illumination by driving a dynamo. A suggestion recently made by Mr. S. Tolver Preston, of Hamburg, indicates very definitely one relation which sound may have to heat. He proposes to estimate temperature by means of tuning-forks! The idea, as expounded in the current issue of the *Philosophical Magazine*, is simple enough, and relates to the well-known fact that the note emitted by a resonance tube varies according to the temperature of the air which it incloses, and Mr. Preston's notion is to employ this in some way as a measure of temperature. One of the simplest aspects of the case may be thus illustrated: Suppose a tube, closed at the inner end, to be inserted somewhere in the wall of a furnace, or buried in some heated substance whose temperature it is desired to ascertain. Now, a tuning-fork of a certain vibrating period will, at normal temperature, vibrating in resonance with a tube possessing a certain length. It will be seen at once, therefore, that by changing the temperature of the tube, or of the substance in which the tube is buried, the tuning-fork will not respond. Another fork of a different vibrating period must now be selected in order to resound with the tube. It has been shown by the dynamical theory of Maxwell that since the pressure of a gas depends on the motion of its particles, the velocity of the propagation of sound depends on the normal velocity of the gas particles or molecules; in fact, that the sound-wave moves independently of the density and pressure of the gas. This applies, as will be at once apparent, to our proposed acoustic thermometer. For it is this normal motion of the molecules of the gas in the tube, the energy of which motion we call the "temperature," which is the sole factor in determining the velocity of sound, of which the tuning-fork employed with the tube is the mechanical indicator. The velocity of sound being as the velocity of the gaseous molecules, and the velocity of the molecules being as the square root of this energy, then, since the temperature is the energy, the velocity of sound in a gas is proportional to the square root of the temperature. If we have a tuning-fork whose vibrating period is mechanically adjustable, it is easy to perceive, then, from the above, that the temperature in the tube is inversely proportional to the square of the vibrating period of the fork. Or, if the length of the tube be adjustable—for instance, if the tube be telescopic—the temperature of the air in the tube, and, therefore, of the heated receptacle, or what not, in which the tube is placed, is evidently proportional to the square of the length of the adjustable tube. Now, zero Centigrade being 273 above the absolute zero, the Centigrade zero is then, of course, 273, expressed as absolute temperature. At 273 above zero Centigrade (which is 546 of absolute temperature), the molecules of the air have, of course, twice the energy they have at zero C. At 4×273 absolute temperature (819 above zero C.) the molecules of air will possess, in the same way, four times the energy possessed by them at zero C., and, therefore, twice the velocity which they had at zero C. (velocity being as the square root of energy). Sound would then be propagated in air in such a tube whose temperature is 819 deg. C. at twice the velocity of its transmission in air at 0 deg. C. So that a tube of air at 819 deg. C. would be in resonance with the same tuning fork as a tube of half the length resounds to at 0 deg. C. It is evident, therefore, that by varying the length of a telescopic tube, and employing a constant fork, we shall serve the same object as (conversely) varying the vibrating period of an adjustable fork and keeping the length of the tube constant. These are the theoretical considerations as given by Mr. Preston in the *Philosophical Magazine*. Some may see a way to propose some practical form of acoustic thermometer based on these principles, and to suggest some mechanical modifications which might make such an instrument extremely sensitive. We commend the notion to our organ-building subscribers.—*English Mechanic.*

GUTTA PERCHA.

ITS ORIGIN, MANUFACTURE, AND COMMERCIAL SIGNIFICANCE.

The price of gutta percha has nearly doubled in two years, and now rules at $1.30 per pound. This remarkable advance in the price of the article is attributed to two causes—the large quantities required in the manufacture of electric and other modern devices and the reckless destruction of the trees from which the gum is obtained. Gutta is the Malayan term for gum and percha is the name of the tree from which it is obtained; therefore the name may be translated gum of the percha tree. This gum or sap is not obtained by merely tapping the trees, as is done by the gatherers of crude rubber along the Amazon and its tributaries, but the Malays and natives of Borneo who collect gutta percha fell each tree from which gum is to be extracted, and thus the destruction of the trees and consequent scarcity of the product is explained. From 1854 to 1875, 90,000 piculs, weighing 133⅓ pounds each, of gutta percha, were exported from Sarawak alone, and this meant the death of 3,000,000 trees. As no trees are planted, the only thing which has saved this species of plant from annihilation is that it does not produce the gum in paying quantities until it is twenty-five to thirty years old. The method pursued in felling the trees is as follows: A staging is erected from fourteen to sixteen feet high, which enables the workman to cut the trees just above the buttresses or banees, as they are called. The tools used in felling are either "billiongs" or "parangs." A billiong is a kind of axe used by the Malays in felling, building and the like. The blade is of a chisel-like form, and the tang is secured at right angles to a handle by means of a lashing of rattan or cane. The parang looks more like a sword bayonet, and in the hands of a Malay is said to be a box of tools in itself, as with it he can cut up his food, fell a tree, build a house or defend himself. After the tree is cut down, some natives beat the bark with mallets to accelerate the flow of the sap, which usually runs slowly, changing color meanwhile. It concretes rapidly. The sap is boiled either with water, lime juice, or cocoanut oil, and it is generally run into moulds which sometimes produces forms of the hardened material resembling various animals in shape. The gutta percha tree, the vernacular name of which is taban, also bears a fruit about an inch long, ovoid in shape, which is eaten by the natives. In Siak, Sumatra, a vegetable butter is prepared from the seeds of this fruit. The trees attain to a height of from 60 to 80 feet, with a diameter of from 2 to 4 feet. The wood is soft, fibrous, spongy, of a pale color, marked with black lines, these being the reservoirs of the gutta percha. The yield of a well grown tree of the best variety is from 2 to 3 pounds of gutta percha, such a tree being about 30 years old, 30 to 40 feet high, and 1½ to 3 feet in circumference. Gutta percha is used in a multitude of different ways. It has been found to be the best non-conductor of electricity and most perfect insulator that has yet been discovered. A wholesale dealer in the article recently stated that scarcely a week passes but some one calls upon him claiming to have found a substitute for gutta percha, but none of the substitutes so far offered has been able to meet the requirements. No other substance has been found so efficient for submarine cables, and according to a statement recently published in the New York *Sun*, the Atlantic cable laid in 1857 is still preserved by its gutta percha covering. This article retains its form at a temperature below 115° F. It is insoluble in water, even in salt water, and it is also insoluble in alkaline solutions and various acids, and is, therefore, made into vessels to contain these substances. By mixing bisulphate of carbon with gutta percha a liquid cement is produced, which is employed in putting patches upon shoes, thus dispensing with sewing, and securing a neater appearance on the shoe. The same cement is also used in repairing rabbit skins. These skins are weak and are easily torn; but by backing them with this cement they are made tougher, and are sold in some cases by unscrupulous dealers as squirrel skins. Another use to which gutta percha has been put is placing it around the bottoms of pantaloons to protect them from wear. It has been made so thin that a yard of it weighed only 7 to 8 pounds. A piece of this was placed around the bottom of the garment, then an inch of cloth was turned in on top of the gutta percha, a hot iron was passed over it, which rendered it secure, thus saving the expense of sewing to the manufacturer. Since gutta percha has advanced so greatly in price, it has been found impracticable to use it for this and many other purposes, in fact it has been stated that a large engineering firm in the United States proposed to enter upon the manufacture of submarine cables on an extensive scale, but were unable to carry out their purpose, on account of the scarcity and the difficulty of obtaining gutta percha. Efforts have been made to check the destruction of this most useful tree by substituting tapping for felling, but the greed of the natives is so great that they adhere to the latter method, because it gives them more of the sap for immediate marketing, being regardless of the fact that the trees are being exterminated. The only remedy for the great scarcity of the article seems to be the cultivation of the tree, and measures of this kind will have to be adopted if gutta percha, which seems to be an article entirely indispensable in some lines of manufacture, retains its place in the commerce of the world. —*Scientific American.*

CATTLE DISEASE.—An important discovery has apparently been made by M. Mandereau, of Besancon, which, if, corroborated, will permit of the easy recognition tubercle in cattle. M. Mandereau found tubercle bacilli in the aqueous humor of the eye in more than a score of bovines suffering from various stages of the disease, even in the very early stages, it appears.

AN ERUDITE MENU.—In looking through our collection of remarkable menus we recently came across the wonderful compilation set before the savants of the Oriental Congress at Stockholm. It forms a small volume of eighteen pages, elegantly bound, and comprising the contributions of distinguished scholars, each of whom discourses of one of the dishes in the menu in one or other of sixteen Oriental languages. The introductory "sup" or nip of schnapps, without which no dinner in Scandinavia is complete, is also honored with an original song in the Kairs tongue. Potage a la suedoise receives a compliment in Getziani from M. Dillman, besides a song in Chinese from Gustav Schlegel; and Prof. Max Muller sings in Sanscrit the praises of Saumon a l'imperiale. Filet de bœuf is distinguished by a verse in Malay by M. Klinkert, and ptarmigan by another in Javanese by A. C. Vreede. Mr. Sayce, in like manner, does homage to the salad in some recondite tongue, probably Chaldaic or Assyrian. E. Amelineau treats of Artichaut au beurre in Coptic; J. Leiblin, of Gateau a la Victoria in hieroglyphics; D. H. Miller, of the ices in Himyaritic; H. Almquist, of the cheeses in an epigram in Bichare; Bu-sa-ta Mansitu, of the Dessert International in Japanese, and so forth. The menu concludes, according to the Swedish custom, with "Thanks for Dinner," written in Persian by the Oriental scholar, Habit.

LUNAR LORE.

DISCOVERIES ATTAINED THROUGH ASTRONOMICAL PHOTOGRAPHY.

Astronomical photography has accomplished many wonderful results, but nothing perhaps more surprising than its discoveries upon the moon. The moon is so near by, and has been so carefully studied with the most powerful telecopes for hundreds of years, that the astronomers had come to think that they knew pretty much all about it, or at least about that face of the moon which is turned toward the earth. But it turns out that photography possesses the power to reveal things upon the moon which cannot be seen by the eye, even with the aid of the best of telescopes. A careful study of the negatives of the moon made with the aid of the great Lick telescope has revealed the existence of many unknown objects there, including great crater mountains and rifts or chasms in the surface of the moon, as well as some of those mysterious objects that go under the descriptive name of bright streaks or rays. Near the great crater which we will call Corpernicus, another crater of nearly equal dimensions is shown upon the negatives although it is absent from the most elaborate maps of the moon and cannot be seen even with the Lick telescope, except when the magic eye of the camera, instead of the human retina, is applied to look for it. When it is considered that this mysterious crater represents the remains of a mountain ring more than fifty miles in diameter, it appears exceeding strange that it should escape detection by the telescope when directed to the moon, and yet be visible upon a photograph of the moon. The reason appears to be that the walls of this newly discovered crater were long ago destroyed, being raised by some denuding force nearly to the level of the surrounding surface. It is consequently, but the remnant of a great crater ring. Even in that condition, however, it would be visible to the eye, but for the fact that its huge neighbor, Copernicus, whose walls are still standing to a great height, is surrounded by enormous masses of luminous material, which looks like lava that must have overflowed the surrounding country ages ago, and reflects back the light of the sun to our eyes with overpowering brilliancy The glare of this broad reflecting surface, covering hundreds of square miles, is so great as to conceal the comparitively low relief of the broken crater ring. In fact, it is not improbable that Copernicus is responsible for the disappearance of the other great crater which doubtless was the predecessor of Copernicus, and once towered up to an equal height above the surrounding plains. After it had ceased to be an active volcano, and Copernicus had burst forth, the latter probably overwhelmed it with torrents of lava, which, filling up the space within its broken walls nearly to the level of their tops, submerged it, so to speak, beneath the new surface thus formed, so that only the summit of its broken walls remains to be caught by the acute vision of the photographic plate. In other parts of the moon similar events appear to have taken place, and there are a number of large craters, enormously greater than any volcanic craters upon the earth, which seem to have been buried by the outburst of lava from subsequently formed volcanoes in their neighborhood, so that only portions of their mountain walls now remain visible. Another discovery, also arising from inspection of the negatives made with the Lick telescope, relates to the wonderful system of bright rays surrounding the most perfect crater in the moon, Tycho. This extinct volcano is some fifty-four miles in diameter, and is surrounded on the outer side of its lofty walls by a comparatively level region, some twenty-five miles broad, of a much darker hue than that of the crater itself or of the surrounding country beyond. The hundreds of great streaks which radiate from Tycho like the spokes of a wheel, varying in width from ten to twenty or thirty miles, and in length from a few miles to nearly 2,000 miles, have always appeared, when viewed with a telescope alone, to take their rise from the outer edge of the dark rim surrounding the crater, but the Lick negatives show that some of the streaks at least pass through this dark rim and extend clear up to the very walls of the crater. The suggestion that these mysterious streaks had their origin in the volcanic energy of Tycho when it was still an active crater, is strengthened by this evidence that the streaks actually reach to the crater itself. These discoveries are likely to give renewed interest to the study of the moon's surface, and while it is perhaps too much to expect that a great deal of light will be thrown by astronomical photography upon the question whether evidences of the present or former existence of life upon the moon can be detected from the earth, yet there can be no question that a new method of attacking the many problems that still remain to be solved concerning the character and condition of our satellite has been placed within the reach of astronomers.

ON THE SCENT.

AN INVESTIGATION OF DOG'S SENSE OF SMELL.

Dr. McPherson gives the following very interesting description of experiments made to determine whether the scent of a dog after his master was due to the boots he wore. To solve this interesting problem, Dr. Romanes took a most intelligent setter, which he had for eight years made his companion upon his shooting excursions. The animal's devotion to him he had often tested most minutely, and his sense of smell was known to be exceptionally acute. He walked over the park lands round his house unseen by the dog for about a mile, having on his ordinary shooting boots, and slipped over a wall to watch operations. As soon as the dog was let off, he broke away at full speed on the trail and reached him in his hiding place in a few minutes. He was repeatedly put on a stranger's track, but he would not follow him. Next he was taken into the gunroom, where he saw his master making ready to start for shooting. He then left his room and went to another part of the house, but his gamekeeper left the house by the back door, walked a certain distance and concealed himself. The dog, now nervously anxious to follow his master, was led to the keeper's tracks by a servant. He followed his trail for a few yards, but he found that his master was not with the keeper. Accordingly, after hunting about in all directions with nervous excitement, he returned to the house. Dr. Romanes then collected eleven men about the place, and directed them to walk close behind one another in single file, each man taking care to place his feet in the prints of his predecessor. In this procession Dr. Romanes took the lead, while the gamekeeper brought up the rear. After walking 200 yards, he turned to the right, followed by five of the men; the remainder turning at an angle to the left, all walking as before in single file for a considerable distance. All then hid themselves. The dog which saw nothing of these proceedings, was then put upon the common track of the whole party. He followed it with avidity till he came to the point of separation. For an instant only he seemed to hesitate, but chose his master's footsteps to the right. Upon another day Dr. Romanes gave his shooting boots to a stranger, who walked with them over the park for a considerable distance. When the dog was led to this trail he followed the scent with the eagerness usually seen when tracking his master. This was a remarkable discovery. Next he put on the stranger's boots and walked over the park in another direction. On being taken to the trail he would not be coaxed to follow it at all. This was even more remarkable. The stranger walked over the park barefooted, but the dog would not follow that trail. Dr. Romanes then walked over the park with bare feet and he followed this trail, but not nearly so eagerly as when he had on his shooting boots. He seemed to be always in doubt as to the correctness of the track and seemed terribly put about. The results of these experiments stimulated him to go on further with his investigations, in order to find out the secret of the discriminating faculty. He walked over the park in new shooting boots, but he would not follow the trail—the boots were strange. Nezt he glued a layer of stiff brown paper to the soles of his old shooting boots, and walked over the park with them, and the setter when led along the trail, paid no heed to it, till he came to the place where, owing to the brown paper being worn through at the heel, the boot had touched the ground. Here he immediately recognized his trail and speedily followed it up. Again he walked 50 yards in his old shooting boots (without the brown paper), then 100 yards in his stockings, and then 100 yards barefoot. The dog followed the first part of the trail at full speed, and continued to run at the same rate till the end. Changing the experiments, he soaked his ordinary shooting boots in the oil of aniseed, and walked with these over the park. But this strong odor did not interfere with the dog's scent, for he ran him down as quickly as before. That is a most curious fact. Dr. Romanes came to the conclusion that this setter distinguished his trail from that of all other men by the peculiar odor of his boots, and not by the particular smell of his feet. The exudations from his feet required to be combined with those from the boot leather, and brown paper can stop the transmission of the scent of both. He also afterwards concluded that the whole body of man exhales a peculiar odor which a dog can recognize as that of its master amid a crowd of other persons.

IMITATION GOLD.—A well-known English scientific gentleman has been experimenting on a metal resembling gold for nearly a year, and has now got it down to almost perfection. He stumbled on it first accidentally while analyzing some metals, and when he realized what he had found he went to work and soon produced a metal which puzzles the best jewe'ers, is as heavy as gold, and to all appearances is of the precious metal itself. When the gold test is applied to it the acid boils up a little, but gives no other evidence that the metal is other than gold, and when wiped off no mark or spot is left, as is the case when the test is applied to brass. It can be manufactured at a comparatively small cost. Aluminum composite is said to be chief factor, 5 to 8 per cent.

THE PIG IN CHINA.—Chinese life is a perpetual surprise. Man's most faithful four-footed friend, the dog, is relegated to the outcast world and his place filled with the more edible pig. Under these auspices, the dog reverts to the ancestral wolf, and is hardly distinguishable from that disagreeable brute, while the hog becomes a distinguished member of society. Every Chinese porker has a name and answers it, especially when called to meals, as promptly and knowingly as a well-trained watch-dog. He lives with the family, and sleeps either on the foot of his owner's bed or else in the baby's crib. After breakfasting *en familie*, he sets off on a constitutional walk through the city and suburbs. He makes calls upon other pigs of equal social standing, invades and robs every garden whose gate may be open, and usually refreshes himself by a walk in the surf on the beach, where he whets his appetites with a dozen oysters on the whole shell and a few defunct fishes.

AN AWKWARD MOMENT.—One of the most embarrassing accidents that ever happened to an actress befell Mrs. Potter while she was playing "Cleopatra" in this city, says the Cincinnati *Commercial Gazette*. She had reached the asp juncture in the play, and the slave had brought that instrument of suicide. Her "Cleopatra" costume was a revelation in more than the millinery sense of the word, but no one suspected it was not securly moored. She grasped the asp with one hand and made arrangements for its application with the other, when something suddenly slipped. Whether a string broke or a pin forgot its duty nobody knows. Bald-headed veterans, who had for decades been familiar with the glories of the ballet and amazon march, turned red and looked uncomfortable, and an infant in the gallery set up a hungry wail. Mrs. Potter did not lose her presence of mind, however; she readjusted herself with neatness and alacrity, the asp was tendered his nourishment, and the play proceeded.

ARSENIC.

A PROTEST AGAINST ITS USE IN THE ARTS AND MANUFACTURES.

The fight already vigorously and pluckily begun against the unrestrained employment of arsenic in the manufactures and the arts promises to be a long and a hard one. On one side will be scientific protest, backed by demonstratable fact and by common sense. On the other, will be the manufacturer, who sees a profitable branch of trade seriously imperiled, and who is prepared to come to its rescue with arguments of the golden and substantial sort which so appeal to the professional lobbyist. Public sentiment, at least in the beginning, will not be a weighty factor in the matter; for public opinion is, on the subject, unformed, indifferent and sluggish. This latter fact points out to our workers the line in which their efforts may most profitably be directed. Public sentiment must be aroused to the dangers of the uncontrolled use of arsenic. Warnings and facts must be given, and re-stated, and given again, with the unwearied persistency which is the price of arresting public attention; given in talk of friend with friend, in serious counsel of the physician to his patients; above all, through the daily press, whose columns are open to endless discussion of a matter so important to the general public, and whose editorial bias, up to date at least, seems distinctly on the side of the reform. It is quite time the reform came to be; and there is good cause to hope that enlightened public opinion will soon insist on its coming to be, when once the facts of the case have been so far realized that public opinion is aroused and formed. First, the fact, monstrous in every sense of the word, that there are imported into the United States, yearly, upwards of nine millions of pounds of arsenic; and that this vast bulk of shockingly dangerous material is so far made use of, before the twelvemonth is passed as, next year to necessitate importation of an equal amount. How is it utilized? Considering how infinitesimal, comparatively, is the amount likely to be employed medically and pharmaceutically, what an immense remainder is to be accounted for to the defenders of the public health. There is little doubt, when we take into account the surprising variety of articles which have been known to communicate arsenical poisoning, that there is scarcely a manufacturer of personal furnishings or household plenishings at whose door may not be laid the charge of ignorance or deliberately imperilling the health of his fellow-beings, by sending out, under his labels, goods capable of communicating poison. Now we have a patient poisoned by the wearing of a cheap, dyed glove; now by a pair of bright bonnet strings; now by sleeping in a room "æsthetically" papered; now by inhaling the impalpable dust from arsenic-tinted curtains blowing in the wind; now a baby sucks arsenic from the corner of its pretty bed quilt; now a child suffers from eating candies wrapped in arsenic-loaded papers. It all reads like some sensational tale in a penny-dreadful newspaper; but it is nevertheless all a deplorable and shameful fact, and will so continue until our laws demand that a label stating the presence of poison be affixed by every manufacturer to every article sent out by him containing arsenic, as must now be done by every druggist with the prescriptions which contain so farcically smaller a relative amount. Naturally manufacturers object to this, and already protests, droll in their bitter animus, their lack of logic and manifest self-contradictions, are met with here and there. Thus we are told by the maker of wall paper that the maker of textile fabrics is all to blame, and the maker of textile fabrics solemnly assures us that he could not afford to use anything so expensive in his business as arsenic, which, we discover on inquiry, costs the prohibitory sum of two cents a pound! The case is, however, so obviously a bad one for the manufacturer that his fight will probably be conducted in "still hunt" fashion, with the weighty yellow arguments hinted at above. Against such argument public opinion, vociferant, not to he placated, is, as we have said, the only effective weapon. Let each of us do his share toward creating such opinion. Facts and facts and facts must be the battering rams with which we break our way through ignorance and indifference. Useful facts to possess ourselves of would be the names of the principal manufacturing houses which are large importers and purchasers of arsenic. The mere publication of their names, and the approximate amount of arsenic purchased by each yearly, might have a salutary effect in so turning the inquiring public eye in their direction as to make it awkward for them to keep silence. Naturally, the most useful facts of all are those relating to accidental poisonings by arsenic in some manufactured articles; facts which to have their full weight should include the demonstration of the arsenic, not only in the suspected article, but in the urine of the patient, a point of immense importance not only in diagnosis, but as legal evidence..—*N. E. Med. Gazette.*

SCHIZOMYCETES.

THE SMALLEST FRIENDS AND FOES OF MAN.

Dr. Koch's successful struggle with the tubercle bacillus, discovered by him eight years ago, has drawn the attention of the whole educated world to the various species of those minute simple organisms, which consist of one, or at most of only a few cells, and propagate by fission, *i. e.*, the parent cell, which is barely $\frac{1}{500}$ millimeter in diameter, divides into two daughter-cells, each of which grows and subdivides in the same manner, whence the name *Schizomycetes.* These organisms being without chlorophyll—the green coloring matter essential to the proper independent development of all plants—become parasitic on dead or living organisms, and, preying and propagating on organic substances, in still or running waters, are taken into the digestive organs of man and beast, and thence find their way into the system. Some make their abode in the passages of animals, and being reduced to dry dust are inhaled by us. The motes which we see in the sunbeam's track are on an average a thousand times as heavy as these minute organisms in their dry state. The Schizomycetes carry out the same destructive operations in the human or animal systems, as they do in plants and in so doing, generate the most fatal diseases. The general form of Schizomycetes guides to their division into four leading types: (1) Spherical-shaped, or *cocci*, which, according to size, are again subdivided into *micrococci* and *macrococci*; (2) rod-shaped, the shorter known as *bacteria*, the longer as *bacilli*; (3) thread-shaped, and (4) spiral-shaped. In the course of their development Schizomycetes vary in shape with varying conditions of sustenance, so that probably some of them which are known under one or more forms, may sometimes assume other forms under which they are not recognized. Schizomycetes are for the most provided with tentacles, which aid them in their movements to procure food. Apart from the ordinary method of propagation by fission into two equal organisms, Schizomycetes, like ordinary fungi, also throw off spores, that is to say, parts of themselves, which germinate and produce fresh fungi. Subject to extreme cold or heat they remain dormant, but awaken with full vigor on being subjected to favorable conditions. Schizomycetes are known to have lain dormant for thousands of years in dry air without losing their vitality. Death occurs only on complete exhaustion of the means of subsistence; but although it is consequently very difficult for us to destroy them, they are frequently eradicated by other microscopic organisms. The struggle for existence is waged as fiercely in their ranks as among higher organisms. The appearance of a new species may be the signal for the disappearance of the hitherto dominant race. Schizomycetes, finding their subsistence in foreign bodies, set up a process of decomposition in those bodies, and to their agency is due the conversion of manure and refuse into plantfood; meats that taste "high;" all food-substances that begin to "smell," are infested by them. When vegetables, or milk, or substances containing sugar turn sour, it is due to chemical changes set up by them. Fermentation is due to their activity and so is the phosphorescence on decomposing meat or fish. But in these processes of decomposition the Schizomycetes for the most part work out their own destruction. They generate substances (*ptomaines*) which arrest their powers of decomposition and reproduction, and finally poison them. This fact forms the basis both of Pasteur's and of Koch's treatment. These creatures subsist as well on animal as on vegetable substance, and in fact find the most favorable conditions in the human body. Here a single germ taken in with the food or with a breath may generate a hundred, thousand in the course of seven or eight hours. They first fasten on the mucus membrane where, breeding rapidly, the work of destruction is soon in full swing. As soon as they have penetrated through the mucus membrane, they get taken up by the small blood vessels and circulate through the whole system. One of the first discovered of the vegetable parasites was the *anthrax* fungus, found in the spleen and other internal organs of herbiverous animals, hares, rabbits, mice, birds of prey, geese, fowls, ducks, sparrows, etc. The slaughter of animals thus infected, the mere handling of their flesh, skin, or hair may result in the communication to man of the poison. Still more fatal are the species to which the several contagious diseases are attributable; and the Schizomycetes of the eye are scarcely less to be dreaded. Finally as possessing historic interest we may mention the fungus which exists in the mouth of man and other mammalia, and causes the decay of the teeth. The self-same fungus has been found in the tartar on the teeth of Egyptian mummies. In fact there is evidence of the existence of Schizomycetes in the carboniferous era, long before the appearance of man on earth. Science has now entered on a crusade against these minute but formidable foes of humanity, but to enable it to reach its desired goal, we must redouble our energies to prevent the spread of the fungi, by all due sanitary precautions.—*Ueber Land und Meer.*

DAMMING THE NILE.—It is now the intention of European engineers to store the waters of the Nile to such an extent as to enable a greater extension of the cotton and sugar cane crops in that region.

VALUABLE PLATE.—Many years must necessarily elapse before the collections of gold and silver plate in this country attain the gigantic proportions of those owned by the royal and imperial families of Europe. Thus the gold and silver plate of the house of Orange at The Hague represents a value of $6,500,000, and includes the trifle of two thousand silver dinner plates. That of the British Sovereign amounts to $10,000,000, that being the estimated value of the plate used during the recent state visit of the German Emperor. The collections of the Austrian and Russian Courts are even larger, while the Duke of Cumberland, eldest son of the last King of Hanover, heads the list with no less than nine tons of gold and silver plate.

A FEW DEFINITIONS.—The poet Tennyson can take a worthless sheet of paper and, by writing a poem on it, make it worth sixty-five thousand dollars. That's genius. Vanderbilt can write a few words on a sheet of paper and make it worth five million dollars. That's capital. The United States can take an ounce and a quarter of gold and stamp upon it an "eagle bird" and make it worth twenty dollars. That's money. The mechanic can take material worth five dollars and make it into a watch worth one hundred dollars. That's skill. The merchant can take an article worth seventy-five cents and sell it for a dollar. That's business. The ditch-digger works ten hours a day and shovels three or four tons of earth for two dollars. That's labor.

BRIGHT STORIES.

THE CHAIR-MENDER.

From the French of Guy de Maupassant.

It was at the end of the opening dinner of the hunting season, at the house of the Marquis of Bertrans. Eleven hunters, eight ladies and the country doctor were seated at the brilliantly lighted table, which was covered with fruit and flowers.

They had just been talking of love, and a warm discussion had arisen, the old question as to whether one could love truly once or more than once. Many cases were brought up of people who had had but one serious love, and of others who had repeatedly loved fervently. Most of the men contended that passion, like disease, could attack the same person many times, and so severely as to kill him, if any insurmountable obstacle arose.

Although this position was unassailable, the ladies, whose opinion was based more upon poetry than on observation, maintained that love, true love, could come only once to mortals, that it was like a stroke of lightning, and that the heart once touched by it was thenceforth so empty, ravaged and seared, that no other strong feeling, no dream even, could spring up in it.

The marquis, who had loved often, opposed this idea very strongly.

"I know," said he, "that a man can love many times with all his heart and soul. You tell me about people who have killed themselves for love, as proofs of the impossibility of a second passion. But I tell you that if they had not been so stupid as to kill themselves, and thus lose all chance of change, they would have been cured, and would have done the same thing over and over again until they died a natural death. Lovers and drunkards are much alike—whoever has drunk, will drink again, and whoever has loved, will love again. It is merely a matter of temperament."

An appeal was made to the doctor, an old Parisian, who had retired to the country, and all begged for his opinion. But he had none.

"It is just as the marquis says," he said; "it is a matter of temperament. For my part I know of one passion which lasted for fifty-five years, without a day's intermission, and which was ended only by death."

The Marchioness clapped her hands, exclaiming, "How beautiful! And what a dream to be loved like that! What joy to live for fifty-five years surrounded by such a deep, strong affection. How happy he must have been, and how blissful his life, who was so beloved."

The doctor smiled and said: "You are quite right, madame, in thinking that the beloved one was a man. You know him; he is M. Chouquet, the village druggist. As for the woman, you knew her, too. She was the old chair-mender who used to come to the chateau every year. But I will tell you the story."

The enthusiasm of the women had cooled and their disappointed faces said plainly, "Pooh!" as if such love could come to none but elegant distinguished beings, who alone were worthy of the interest of refined and properly conducted people.

"Three months ago," continued the doctor, "I was called to the death bed of this old woman. Accompanied by her two big black dogs, her friends and guardians, she had come to the town the night before in the wagon which served her for a house, drawn by the old mare you have seen. The cure was already with her when I arrived. She named us executors of her will, and in order that we might understand her last wishes, she told us the story of her life, the saddest and strangest story I ever heard.

"Her parents were both chair-menders, and she had never lived in a house built on solid earth. As a little thing she wandered about ragged and dirty. The family always stopped by the roadside, at the entrance of the villages, and unharnessed the horse, who browsed about, while the dog slept with his nose on his paws. There the little girl played in the grass, and the father and mother, in the shade of the wayside oaks, patched up all the old chair seats of the neighborhood.

"They talked but little in that wandering home. After a short discussion as to which had better go the rounds of the houses, with the same old cry of 'Chairs to mend!' they would sit down and weave their straw in silence. When the child wandered too far away from the wagon, or tried to make friends with some village youngster, she was recalled by her father's angry voice: "Come back here, you good-for-nothing!" Such were the only endearments which she knew.

"When she grew older she was sent to collect the wornout chairs. In this way she made some acquaintances among the children, but it was now the parents of her new friends who called roughly to their children, 'Come back here, you good-for-nothing! Don't let me see you talking with bare-footed children!' And often the small boys threw stones at her.

"Some ladies had given her a few sous, which she kept with great care. One day—she was then eleven years old—as she was going about in this neighborhood, she met little Chouquet behind the cemetery. He was crying bitterly because another boy had stolen two centimes from him. The tears of the little fellow, one of the children whom in her simple neglected mind she had always thought happy and contented, moved her deeply. She went up to him, and when she learned the cause of his grief, poured all her savings—seven sous—into his hands, he taking them as a matter of course and speedily drying his tears. Then, wild with delight, she was emboldened to kiss him. As he was busy examining his money he let her do it. Finding that he did not repulse her she kissed him again, gave him a warm hug and then ran away.

"What did she think about in her poor little head? Did she love this youngster because she had sacrificed her modest fortune to him, or because she had given her first kiss of affection? The mystery is the same for both great and small.

"For months she thought of nothing but the corner of the cemetery and this urchin. In the hope of seeing him again she stole from her parents a sou here, another there, from the price of a mended chair or from the money given her to buy food. The next time she came to the town she had two francs in her pocket, but she could not contrive to do more than see the little apothecary, spotlessly clean, standing behind the windows of his father's shop between a crimson flask and a jar of leeches. She only loved him more than ever, fascinated and over-awed by the splendor of the colored water and the transfiguration of the shining crystals.

"She treasured his memory secretly, and when she met him the next year playing marbles near the school with the other boys, she rushed up to him, threw her arms around him, and kissed him so violently that he began to howl with fear. Then she gave him her money to pacify him. There were three francs and twenty centimes, quite a fortune, and he stared at it with big eyes, took it, and let her caress him as much as she wanted to.

"For the next four years she gave him all the money she could get, and he pocketed it deliberately in exchange for the kisses which she was allowed to take. Sometimes it would be thirty sous, sometimes two francs, once it was only twelve sous, which made her weep with grief and shame, but it had been a hard year; and the last time it was a great round five-franc piece, which made him laugh with joy. She thought of nothing but him, and he waited impatiently for her return, and delighted her heart by running to meet her when she came.

"Then he disappeared. He had been sent away to school. She found out that easily enough by asking questions. So she used all her wits to try and change the route which her parents took, in order to make them pass through the village during the vacation. She succeeded at last, but it was now two years since she had seen him, and she scarcely knew him he had changed so much. He had grown larger and better looking, was very imposing in his gold-buttoned coat, and passed proudly by pretending not to see her.

"She wept over it for two days, and from that time she suffered unceasingly. She came back again every year and saw him without daring to greet him, while he did not even condescend to look at her. She still loved him hopelessly. 'He is the only man in the world that I ever saw, doctor. I do not even know whether there are any others,' she said to me.

"Her parents died in the course of time and she worked on in their trade, but she now had two dogs instead of one—two terrible dogs, with whom no one would dare to meddle.

"One day, on her return to the village in which lived her heart's idol, she saw a young woman coming out of Chouquet's shop, leaning on his arm. He was married and that was his wife.

"That night she threw herself into the pond in the square by the mayor's house. A belated drunkard fished her out and carried her to the druggist's shop. Young Chouquet came down to take care of her, worked over her apparently without recognizing her, then said roughly: 'How foolish you are! How could you do such a thing?'

"He had spoken to her! That was enough to relieve her, and she was happy for some time after.

"He would not take any pay for his trouble, although she tried to insist on his doing so.

"And so passed her whole life. She mended her chairs and dreamt of Chouquet, and every year she saw him through his shop windows. She fell into the habit of buying small supplies of medicine from him, so that she still saw and spoke to him and gave him money.

"She died last spring, as I just said. After having told me her sad story, she begged me to give the savings of her life to him whom she had loved so patiently, for she had worked only for him, even starving herself at times in order to increase her hoard and to be sure that he would think at least once more of her when she was dead.

"She gave me 2,327 francs, twenty-seven of which I left with the curé to pay the funeral expenses, and the rest I took away when she finally ceased to breathe.

"The next day I went to see the Chouquets. They had just finished breakfast and were seated opposite each each other, with a satisfied, important look on their stolid, ruddy faces. A strong smell of the apothecary's shop pervaded the place.

"They asked me to sit down, and offered me a glass of kirsch-wasser, which I accepted. I then began my story in a trembling voice, feeling sure that it would make them weep.

"Just as soon as he understood that he had been beloved by this wanderer, this chair-mender, Chouquet was filled with indignation, as if she had stolen from him his honor and reputation, the esteem of men, and all that he most valued.

"His wife, who was equally angry, repeated again and again, 'The impudent creature! the impudent creature!' as if she could think of nothing else to say.

"Chouquet rose in his wrath and strode up and down the room, his Greek cap tilted over one ear, stammering, 'Did you ever hear anything like that, doctor! What a thing to happen to a man! If I had only known it I would have had her arrested and put in prison, and she would have found it hard to get out, I promise you."

"I was completely surprised at the result of my charitable errand, and was at a loss what to do or say; but as I had still my commission to finish, I continued.

"She instructed me to give you her savings, which

amount is 2,300 francs; but as what I have just told you seems so very disagreeable, perhaps it would be better to give the money to the poor.

"They both stared at me, dumb with amazement. I took the money from my pocket—a miserable collection of all sorts and kinds, gold and copper mingled—and asked, 'What will you have done with it?'

"Mme. Chouquet was the first to recover herself. 'Well, I suppose, as it was this poor woman's last wish, I think we can hardly refuse.'

"'We can always buy something for the children with it,' murmured her husband.

"'Just as you please,' I said drily.

"'As long as she wished it, you might as well give it to us,' they added. 'We can find plenty of good uses for it.'

"I gave them the money, bowed, and took leave of them.

"The next day Chouquet came to see me and said rudely, 'That woman left her cart here, didn't she? What have you done with it?'

"'Nothing. You may take it if you want it.'

"'Very well. It will do for a shed in my kitchen garden,' and he went out. I called him back and said:

"'She left an old horse and two dogs besides. Don't you want them?'

"He stopped in surprise. 'No, indeed; what could I do with them? You may dispose of them as you please.'

"And he laughed and held out his hand to me. I took it, for how could I do otherwise? It would not do for the doctor and druggist in a little village to be enemies.

"I kept the dogs, and the curé, who has plenty of room, took the horse. The wagon serves Chouquet for a shed, and he bought five railroad shares with the money."

"That is the only case of deep love I have ever known."

The doctor was silent. The Marchioness, with tears in her eyes, said with a sigh, "Only women know how to love."

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

September.

GAME AND POULTRY.—Pigeon, chicken, duck, woodcock.

MEATS.—Beef, mutton, lamb, veal, ham, kidneys, liver, venison.

FRUITS.—Apples, bananas, blackberries, gooseberries, huckleberries, grapes, melons, oranges, peaches, pears, pineapple, plums, raspberries, currants.

FISH.—Bass, blackfish, bluefish, clams, cod, crabs, eels, flounders, halibut, herrings, lobster, mackerel, mussels, porgie, prawn, rockfish, salmon, trout, sea bass, sturgeon, turtle, white fish, whiting.

VEGETABLES.—Beets, beans, cabbage, carrots, cauliflower, corn, cucumbers, egg-plant, garlic, lettuce, onions, parsley, parsnips, potatoes, radishes, rhubarb, savoy, shallots, spinach, squash, tomatoes, turnips.

PRACTICAL RECIPES.

VEGETABLE SOUP.—Wash half a pint of pearl barley and let it soak for half an hour; drain, put it in a saucepan, add a small onion cut in two, a couple of the coarse stalks of celery, half a turnip, salt and pepper; pour in three cups of water and three cups of milk, let it come to the boil, set back where it will simmer until the vegetables all are soft, then strain through a wire mashing as many of the vegetables through as possible. Return the soup of the saucepan. Add a cup of milk with two well beaten eggs in it and cook gently over the fire until it thickens stirring all the while. Serve with sniffets of fried bread.

POACHED EGGS WITH TOMATO SAUCE.—Carefully poach your eggs. Toast some thin slices of bread, butter them and spread on each slice a little anchovy paste; lay the toast on a hot dish and put an egg on each slice. Have ready some tomato sauce, made by stirring a can of tomatoes with an onion and a few whole cloves, pepper and salt. When they have cooked strain through a sieve, thicken with a good lump of butter rubbed into a tablespoon of flour. Pour this sauce around the eggs and serve at once.

POTATOES BAKED WITH CHEESE.—Cut boiled potatoes, while still warm, in neat, medium-sized pieces; cover them with hot milk, and add salt, white pepper and a little butter for seasoning. Simmer in the milk ten minutes, then fill a shallow baking dish with the stewed potatoes, add a top layer of grated crumbs and cheese and bake a delicate brown.

BEEF LOAF.—Chop three pounds of raw lean beef very fine, add to it two cups cracker crumbs, two eggs, salt, pepper, a cup of milk. Grease a deep bread pan, pack the beef in it and bake; when done turn out onto a dish and serve with tomato sauce.

OYSTER FRITTERS.—Make a batter with a pint of milk, an egg, salt, and flour enough to make it the proper consistency; half a teaspoon of baking powder mixed with the flour. To this add a pint of chopped oysters and fry by spoonfuls in boiling lard.

BROWN BUTTER FOR FISH.—Cook two large tablespoonfuls of butter until it is brown, then let a few sprigs of parsley cook in it for a few moments, skim out the parsley, add a squeeze of lemon juice to the butter and pour it over broiled fish.

TRIFLES.—Cut six small sponge cakes in slices, lay them in a pudding dish, make them soft by pouring either a little sherry or sweet milk over them, spread on them two spoonfuls of jam and pour over a cold custard made of a cup and a half of milk, the yolks of two eggs, sugar to sweeten. Beat up the whites to a very stiff froth, sweeten slightly, heap on top of dish and serve.

EVOLUTION.

SOME VIEWS ON THE ORIGIN OF ORGANIC FORMS.

A paper was published in the *Literary Digest* some time ago, by a Mr. Keep, expressing serious doubts in regard to the evolution theory, to which Prof. Joseph Le Conte makes the following reply in the August number of the *Overland Monthly*: "It has been truly said that in order to criticise any theory profitably, it is necessary, first, not only to understand it, but to sympathize with it. It is certain that Mr. Keep has not been able to place himself at the stand-point of modern thought on the subject of evolution. His point of view is pre-Darwinian. His objections have been already discussed and disposed of. I cannot, therefore, take up these difficulties seriatim. All I can do is to clear up some fundamental misconceptions concerning the origin of life and the origin of species. The theory of evolution is not conditioned, as many suppose, on its ability to explain the origin of life—to imagine so is to misunderstand the true function and domain of science. The domain of science includes only *secondary* causes or processes by which things come about. Or, if we like it better, we may define it as the modes of operation of the First Cause. We trace these processes as far back as we can. If we find a limit, that does not invalidate the previous explanation nor have we any reason to conclude that where our knowledge stops natural processes stop also, and supernatural methods begin. Suppose we accepted the earth as it now is, and knew nothing of how it became so, still there would be a science—physical geography—which studied the laws of its forms and forces. When we learn that the earth has gradually, through an immense lapse of time, become what it is, then we study the laws of this gradual becoming, and we have the science of geology. We may be able to go no farther, we may not be able to imagine, even, how the earth originated, but this does not invalidate the science of geology; nor do we imagine that because our knowledge ceases, natural processes cease also at this point. So it is in the matter of the theory of evolution. The fact of not being able to explain the origin of the different primal forms, does not invalidate our reasoning; neither do we suppose that because we cannot explain the supposed primal forms, they came by miraculous process. By profounder study and greater knowledge we now see reasons for tracing the organic kingdom back to one primal living form of simplest structure. How this primal form originated we do not know and cannot imagine; still we conclnde that it came by a natural process. But the essayist assumes: (1) That it did not come by natural forces, and a natural process, for the same forces would produce similar results now; but this never occurs, therefore the origin of life must be supernatural, and (2) if the origin of the first life was supernatural, then it is probable that the origin of each subsequent kind of life (species) was also supernatural. To the first of these propositions—it is true that every attempt to generate life *de novo* has failed. I believe it will always fail. But the complexity of the problem is so great that any number of failures is not sufficient to convince us of its impossibility. It is evolution itself that makes its impossibility certain. Evolution does not go backward, and begin again at its starting-point. It moves ever forward in some direction. In evolution golden opportunities come but once. For example, supposing man originated by evolution from some lower form of animal; if he were to-day destroyed, there is no possibility that he would be reformed by evolution from any existing animal. No existing form of animal is on its way manward. So, also, supposing life to have originated from dead matter, and physical or chemical forces, if life were swept away to-day from the face of the earth there is no possibility that it would be relighted by any natural process, *i. e.*, it would not be relighted at all. The golden opportunity of favorable conditions is past forever. The conditions under which so wonderful a transformation could take place are so complex that they could occur but once in the history of a planet. Nor is this law peculiar to the living kingdom. The same is true of the inorganic world. The formation of elements, even by natural process, can take place but once in the history of a planet. As to the second proposition, viz., that if life originated by supernatural process, then, also, all subsequent transformations of forms of life were also supernatural, we would ask the essayist to push this proposition to its logical conclusion. He, doubtless, believes that matter originated by supernatural means; therefore, according to his logic, all subsequent transformations of matter are also by supernatural means. On this view what becomes of our science? The essayist says that the conclusions of evolution are so contrary to common experience that the intelligent mind hesitates to accept them. This is a most extraordinary statement. Does he mean that the miraculous origin of species is most in accordance with common experience? Are there any forms of any kind—organic or inorganic, living or dead—that did not, as far as we know, come by a gradual process of transformation? Soil was once supposed to have been made at once as a clothing to cover the rocky nakedness of the newborn earth, and to afford a foothold for plants. Now we know that soil is naught else than the result of the rotting down of rocks. In fact, all inorganic forms, without exception, and all organic forms, so far as common experience extends, came by natural process. Not a single case ever fell under common experi-

ence in which any form, organic or inorganic, living or dead, came by any other process than a natural one. Mr. Keep has been able to cull some hard nuts for evolutionists to crack. The elephant and the whale are acknowledged to be extreme types, the origins of which are very obscure; some steps of the transformation are indeed known, still many gaps remain. But is the theory of miraculous creation any better or half so good in this regard? Remember that science is a study of processes. Is it not evident that any natural process, however strange the result, is more scientific, more in accordance with common experience, than a supernatural origin?"

CUBAN HYGIENE.—A movement is on foot for the establishment of a Society of Hygiene, in Havana, Cuba.

AMERICA LEADS.—Brazil and Mexico have adopted the American locomotive on their railways, and many other countries are following their example.

HEAVY WOOD.—Of the 413 species of trees in the United States sixteen will sink in water. The heaviest is the black iron-wood of Southern California.

MEXICAN ROADS.—In the last ten years the railroad system in Mexico has increased from 300 to 6000 miles, and fully 4000 additional miles are contracted for.

THE WORLD'S BOTTLES.—To bottle the fluids of one kind and another that are consumed in this world requires an annual output of about 8,850,000,000 bottles.

WINE FAILURE.—The wine crop on the Rhine, Moselle, and the Palatinate is said to be a complete failure, owing to the long frosts which occurred early in the season.

DUST AND CONSUMPTION.—Dr. Praussnitz has found tubercle bacilli in the dust of a number of compartments of railway carriages in Germany which had been occupied by consumptive patients.

BRAZILIAN COAL.—Coal equalling that of the finest Lehigh Valley grade, has been discovered in Brazil, the veins being from four to twenty-five feet in thickness. The mines are situated at and near Sonora.

COALS TO NEWCASTLE.—The demand for American screws is so great in England and Germany that a screw company of Providence has established a branch factory in Leeds, England, and will put up another on the Continent.

LANDLORDS' LIABILITIES.—Landlords in England, the courts have held, are liable for damages in case of disease of tenants from defective drains, etc., on condition that the landlord had warranted the premises to be in good sanitary condition.

IMPORTANT PROVISION.—The notification of infectious disease is making fair progress in England. Fifty-five "authorities," with a population of over 6,000,000, now require measles to be reported; whooping cough is notified in 14 districts. It is now suggested that influenza, or it appears the grip, be included as within the notification act.

NEW EXPLOSIVE.—The new explosive called ammonite is probably the most useful and reliable yet made. It has great power, is free from danger in manufacturing and in use, and recent tests made with it in England have resulted in the railroads taking it for transportation without the usual restrictions pertaining to explosives. It is not injured by exposure to the air and will not decompose. Its ingredients are a mixture of 81½ per cent. of ammonium nitrate and 18½ per cent. of mono-nitro naphthalene.

MEMORIAL PRESCRIPTION.—A St. Petersburg lawsuit is attracting much attention. The defendant is a prince, whose wife died from the effects of a too powerful medicine which the family doctor, one of the best known physicians in the city, had prescribed for her. The widower, instead of causing texts of the Holy Scriptures to be sculptured on the tomb, has caused a fac-simile of the fatal prescription, with the doctor's signature, to be engraved on the marble tomb just below the line giving the date of the death of the princess. The doctor is now appealing to the courts of law to have the objectionable inscription removed on the ground that his practice is injuriously affected thereby.

SPEED OF BICYCLES.—The *Kolnische Zeitung* gives an account of some interesting experiments which were tried by Major Brix, the commander of the Militar-Turnanstalt in Berlin, in order to test the speed of bicycles as compared with that of horses, for the purpose of conveying despatches. The distances attempted were, from Straussberg, just under twenty-four miles, and from Eberswalde, thirty-two miles. In the latter journey two cavalry officers rode against two infantry officers mounted on bicycles. The latter accomplished the journey in 215 minutes and 210 minutes respectively, while the two lieutenants on horseback arrived at their destination seven minutes before the first bicycle rider. In the shorter distance the same result was obtained, the riders arriving a few minutes in advance of the bicyclists. In both cases the cavalry officers only rode at a gallop for the first fifteen minutes of the journey, while the bicyclists went at full speed all the way.

Exhaustion

Horsford's Acid Phosphate.

The phosphates of the system are consumed with every effort, and exhaustion usually indicates a lack of supply. The Acid Phosphate supplies the phosphates, thereby relieving exhaustion, and increasing the capacity for labor. Pleasant to the taste.

Dr. A. N. KROUT, Van Wert, O., says:
"Decidedly beneficial in nervous exhaustion."

Dr. S. T. NEWMAN, St. Louis, Mo., says:
"A remedy of great service in many forms of exhaustion."

DESCRIPTIVE PAMPHLET FREE.

RUMFORD CHEMICAL WORKS,
PROVIDENCE, R. I.

BEWARE OF SUBSTITUTES AND IMITATIONS.

CAUTION:—Be sure the word "Horsford's" is *printed* on the label. All others are spurious. Never sold in bulk.

BUSINESS NOTES.

HORSFORD'S ACID PHOSPHATE

For the tired brain from over-exertion. Try it. Dr. W. W. Blackman, Brooklyn, N. Y., says: "I am very much pleased with it in seasickness. Several cases have been brought to my attention where it afforded prompt and entire relief."

Subscription $1.00 per year. Now is the time to subscribe.

ORIGINAL. No. 18.

Plum Roll

BY MRS. S. T. RORER,
Principal Philadelphia Cooking School.

Add one teaspoonful of Cleveland's baking powder and a half teaspoonful of salt to one pint of sifted flour. Sift again. Rub in one tablespoonful of butter, add sufficient milk to make a soft dough. Roll out, sprinkle with one cup of chopped raisins and a half cup of chopped citron. Dust with cinnamon, roll up and steam for thirty minutes. Serve warm with hard sauce.

Use only Cleveland's baking powder, the proportions are made for that.

The most healthful leaven is carbonic acid gas from pure cream of tartar and soda. It is the only leavening power of Cleveland's Baking Powder. That is why Cleveland's is perfectly wholesome, leavens most and leavens best.
Try it, Cleveland's.



25 CTS. PISO'S CURE FOR CURES WHERE ALL ELSE FAILS. Best Cough Syrup. Tastes good. Use in time. Sold by druggists. CONSUMPTION 25 CTS.

Fine Table Wines
From our Celebrated Orleans Vineyard.

Arpad Haraszthy & Co.
Producers of the
ECLIPSE
CHAMPAGNE,
530 Washington St.
SAN FRANCISCO.

GENERAL AGENCIES:
NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOSEPH R. PEEBLES' SONS CO., 73 West Fourth Street.
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.

PURE PEPSIN

In Powder and Scale.
MANUFACTURED BY

ARMOUR & COMPANY, Chicago.

Guaranteed free from adulteration or make-weights; excellent physical properties and high digestive power.

Under similar conditions, **ARMOUR'S PEPSIN** will exhibit greater activity than any other pepsin now before the profession.

The Manufacturers will be pleased to supply members of the Medical Profession with samples of their pepsin, and with full details regarding digestive strength, if desired.

TO ADVERTISERS.

It is now nearly seven years since the AMERICAN ANALYST began its mission as an advocate of pure food and an opponent of sham products. The history of its labors in that field, even if confined to a reviewal of the success it has achieved in exposing and defeating unscrupulous schemes involving risk to the health and depletion to the purse of the public, would require greater space to rehearse than is available within the limits of this page. As we have heretofore had occasion to explain, in relation to the purposes of this journal, humbugs seeking to enrich themselves through the sale of high-sounding specifics for various human ailments, are subjected to the crucial test of thorough chemical analysis of their goods; and where the latter, as too frequently occurs, prove to be frauds, the facts are placed before our readers in order to save the public from further unconscious imposition. The AMERICAN ANALYST, in addition to the warfare it wages against that species of malefactor, co-operates regularly with the Boards of Health of this and other cities in efforts to secure sanitary and food reforms through organized efforts, and it is conceded to be the only popular medium through which those bodies can bring their purposes and action intelligently before the general public. Reaching as it does all classes—manufacturers, merchants, physicians, chemists, and private families—all over the land, its influence is exerted over a vast radius, producing results as visibly marked as they are wide-spreading. The scope of this journal, however, is not limired to the missionary work above described. Its varied contents cover almost the entire field of scientific as well as social progress, and each yearly volume constitutes a compendium of current facts in nearly every department of knowledge such as can nowhere else be obtained in such comprehensive shape and so cheaply. In this relation we take occasion to publish here a few extracts from a large number of similar compliments that we have received from strangers as well as from our regular patrons. A New Haven editor writes: 'As a newspaper man, and one with a strong, active instinct for good miscellany matter, I want to congratulate you on your publication. The ANALYST is certainly a unique and valuable periodical, and I feel sure that if you press its sale you will gather in thousands who are waiting only to see it before subscribing." A London editor writes us: "I have just seen your excellent paper for the first time, and I am quite delighted with it. I wish you would exchange it for my magazine." A New York journalist, one of the most famous in the profession in America, bore down upon us with the following unexpected praise: "I cannot refrain from congratulating you on the ANALYST. Its brainy suggestions make it one of the most welcome of my exchanges." A well-known scientist says, in the course of a letter on other subjects: "Part of my leisure this summer has been devoted to cutting up my files of scientific papers. It may please you to know that I was astonished to find how perfectly you have kept the ANALYST abreast of scientific thought. It is indeed a valuable paper, and I congratulate you on your success in making it so worthy an addition to technical literature." These extracts will suffice to show the estimation in which the AMERICAN ANALYST is held by experts familiar with its purposes and methods. It is essentially a paper for the family, and with the low subscription price of only one dollar, it ought to find regular and welcome lodgment in every household in the United States.

HAMMOND'S
CELEBRATED
Calumet Oleomargarine

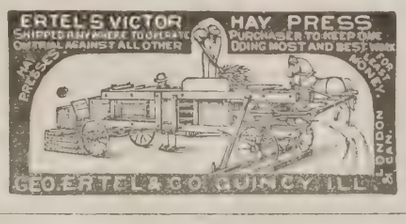
Strictly pure, cheap and healthful.
Ask your grocer for it.
Put up in packages of all sizes, also prints and rolls.

C. H. HAMMONDCO.,
607 to 615 THE ROOKERY,
CHICAGO.

Also offices at Boston, South Omaha, Neb., and Hammond, Ind.



DETECTIVE! WE WANT A MAN IN every **locality** to act as **Private Detective** under our instructions. Send stamp for particulars.
WASHINGTON DETECTIVE AGENCY,
Box 787. Washington, Iowa.



We shall be glad to supply our readers with any periodical published at club rates.
Send us a postal naming periodical and we will quote you prices.
ANALYST PUBLISHING CO.,
19 Park Place,
New York.

A FORTUNE IN A FORTNIGHT!
Can't be expected, but thousands are making good livings from our FAMOUS TRADE SECRETS; Nearly 3000 GUARANTEED receipts of every business sent for $1 00. List and particulars free.
Box 441. EUREKA PUBLISHING CO., Chicago, Ill.

LADY AGENTS WANTED.
I have a medical specialty for ladies use, which is one of the best selling articles in the country. You can make a good income handling it, and at the same time be doing your sex a great benefit. Write me at once for full information and exclusive territory. If you wish a sample sent enclose 12 cents postage. Dr. H. H. Jackson, 103 State Street, Chicago.

We can save you Fifty Dollars when you Build. See

A complete set of Plans to build from, simply state about price of dwelling desired. 25 cts. in stamps. Our book "Beautiful Homes." 25 cts. Our monthly book "The National Builder," 25 cts. Address
The National Builder, Adams Exp. Bldg., Chicago, Ill.



GOLD MEDAL, PARIS 1878.



W. BAKER & Co.'s
Breakfast Cocoa
from which the excess of oil has been removed,
Is Absolutely Pure and it is Soluble.
No Chemicals
are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.
Sold by Grocers everywhere.
W. BAKER & CO., DORCHESTER, MASS.

CONFEDERATE MONEY.

Warranted Genuine and in Good Condition.

We are extensive dealers in Confederate Money—rare relics of our late civil war; also Bullets, Cannon Balls, etc. We want agents in every city North to sell these mementoes, and we will pay agents handsomely to sell our goods. We will furnish the money to those desiring at the following retail prices: Shinplasters, 10, 25, 50 and 75 cents each, or the entire set 50 cents. Complete sets, consisting of $100, $50, $20, $10, $5, $2, $1, 50c., $1 per set. $500 bills, $2.50 each. $100 bills, 15 cents, or two for 25 cents. $50 bills, 10 cents, or two for 15 cents. $5 and $20, 5 cents each. 50c., $1 and $2, 25 cents each. Inquirers enclose stamp for reply.

Publishers of SOUTHERN AGENT, Atlanta, Ga.

LITTLE BOYS AND GIRLS

MAKE EASILY $2 A DAY.

Write for particulars. Address

BARKER PUBLISHING COMPANY, Atlanta, Ga.

$5, $10 and $20

CONFEDERATE BILLS,

only five cents each. AGENTS WANTED.

SOUTHERN STAR, Atlanta, Ga.

PUBLICATIONS OF THE

ANALYST PUBLISHING CO.

THE AMERICAN ANALYST.
Weekly. Every Thursday. $1 per year.

THE ROOFER, TINNER AND SHEET-IRON WORKER.
Monthly. 15th each month, $1 per year.

THE LEATHER MANUFACTURER.
Monthly. 1st each month. $3 per year.

Reliable agents and representatives wanted everywhere on liberal terms. Address

ANALYST PUBLISHING CO.
19 PARK PLACE, NEW YORK.

"BILLET"

are

Carefully Selected French Sardines, Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS.

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,

HOWARD STREET, BOSTON, MASS.

THE QUEEN'S PRIZE SCHOOL OF HISTORY.

About two years ago the publishers of THE CANADIAN QUEEN added what has proven to be a very popular and successful feature to their publication in establishing their Prize History School. It has offered competitive examinations in English, Canadian and American History, giving valuable rewards to those making the most correct answers. During this time there have been added the names of over forty thousand new subscribers to their books. Rewards have been made by THE QUEEN which have cost them in cash over ten thousand dollars. THE QUEEN'S Prize School of History has received the sanction and support of the clergy, press, and, in fact, of the best people of the Dominion of Canada. The following, taken from a leading daily newspaper, expresses an opinion which is universal:

A HANDSOME PRIZE.

AN EVIDENCE OF WHAT A GENUINE MAGAZINE COMPETITION OFFERS.

"On Friday there arrived from Toronto, for Miss M. Hora, a handsome Shetland pony, harness and cart, being the first award in the Royal Quilt Competition of THE CANADIAN QUEEN magazine. It attests the genuine nature of the magazine's contests by its excellent condition and value. THE QUEEN has frequent competitions and has made innumerable awards, displaying a generosity quite surprising to those who have had experience of the limited field for Canadian journalistic enterprise. But THE QUEEN has been a success as a business venture from the start, and is growing in literary excellence steadily. It covers the field of fashion, as well as light reading; talks to the household, the young, and, indeed, all home classes. The competitions have been used to assist the introduction of the magazine, for where it is introduced it is quite certain to remain a monthly guest. The leading prizes have been made, as instance this latest to Kingston, while many smaller prizes have rewarded the moderately successful among competitors. THE CANADIAN QUEEN is truly royal in its ways."—*The (Kingston, Ont.) Daily British Whig*, June 27th, 1891.

QUESTIONS IN AMERICAN HISTORY.

1.—Give the names of the early navigators who it is claimed by historians first discovered America.
2.—From whom has America taken its name?
3.—What class and nationality first settled Virginia? New York? Massachusetts? Pennsylvania? Maryland?
4.—What action did the Continental Congress of 1774 take and what was the result of that action?
5.—What was the first battle fought in the War of the Revolution?
6.—What nation rendered the Americans great assistance in the War of the Revolution?
7.—Give the names of the committee appointed to draft the famous Declaration of Independence.
8.—What was the date of the signing of the United States Constitution?
9.—After becoming a nation and before the great Civil War, what were the principal conflicts which engaged the Americans?
10.—What was the direct cause of the Civil War? What Generals of the Northern Army have occupied executive positions under the Federal Government since the closing of the War? Who was Commander-in-Chief and who were the principal Generals of the Confederate Army during the struggle?
11.—How long did this War last and what is the computed loss of life?
12.—What can be said to-day of the United States as a nation?

To the *First* gentleman sending the correct answers to the above questions in American History the publishers of THE QUEEN will present **"Majestic,"** acknowledged the **Handsomest and Finest Riding Horse in Ontario.** ("Majestic" is sixteen hands high, thoroughbred, seven years old, and valued at $350.00.) To the *First* lady the publishers of THE QUEEN will present an elegant **Jacket of Genuine Alaska Seal** to be made according to the measurement supplied by the winner. To the *First* boy under sixteen years of age the publishers of THE QUEEN will present a **Little Giant Safety Bicycle,** valued at $75.00. To the *First* girl under sixteen years of age the publishers of THE QUEEN will present an elegant **Music Box,** playing twenty tunes, finely finished and valued at $55.00.

To the gentleman from whom the *Last* correct answers are received before the close of this Competition, the publishers of THE QUEEN will present a **First Cabin Passage to Europe and Return** and **$200 in Gold** for expenses. This trip can be taken by the winner any time before October 1st, 1892. To the lady from whom the *Last* correct answers are received before the close of this Competition the publishers of THE QUEEN will present a **Pony, Cart and Harness.** To the boy under sixteen years of age from whom the *Last* correct answers are received before the close of this Competition the publishers of THE QUEEN will present a **Solid Gold Watch** containing one of the best American movements, and valued at $75.00. To the girl under sixteen years of age from whom the *Last* correct answers are received before the close of this Competition the publishers of THE QUEEN will present an elegant **Solid Gold Watch,** containing one of the best American movements, and valued at $65.00.

ADDITIONAL PRIZES IN ORDER OF MERIT: Silver Tea Services, Ladies' Gold Watches, Silk Dress Patterns, French Mantel Clocks, Portiere Curtains, Toilet Cases, Manicure Sets, and many other useful and valuable articles.

The object of the publishers in offering these liberal prizes is to introduce THE QUEEN Magazine into **new** homes. Answers must be mailed *on or before* November 10th, 1891, and must be accompanied by $1.00 for one year's subscription to THE CANADIAN QUEEN. Prizes awarded to subscribers residing in the United States will be shipped to them **free of duty.** The distribution of awards is in the hands of disinterested persons, and decisions will be based on the correctness of answers. Use your own language in wording the answers. No corrections can be made after your answers are mailed. THE QUEEN is a large, forty-eight page family magazine, especially interesting to ladies and children, and visits regularly **over one hundred thousand of the best homes** in Canada and the United States. The awards in THE QUEEN'S Prize School of History are made strictly with regard to merit, without partiality to persons or locality. The decisions must be accepted as final. If you have never seen a copy of THE QUEEN send six U. S. two cent stamps and receive a late number, post paid, containing letters from those who have received rewards in previous contests.

Address THE CANADIAN QUEEN, PRIZE SCHOOL OF HISTORY, 58 BAY STREET, TORONTO, CANADA.



OUR GREAT OFFER

TO SUBSCRIBERS

TO THE

AMERICAN ANALYST.

We will send the **ENTIRE SET OF DICKENS' WORKS,** *in* **TWELVE VOLUMES,** *as here described, all postage prepaid by ourselves, also* **THE AMERICAN ANALYST** *for* **ONE YEAR,** *upon receipt of* **$1.50,** *which is only* **50** *cents more than the regular subscription price of this paper.* Our readers, therefore, practically get a set of Dickens' works in twelve volumes for only **50** cents. This is the grandest premium ever offered. Up to this time a set of Dickens' works has usually been $10.00 or more. Tell all your friends that they can get a set of Dickens' works in twelve volumes, with a year's subscription to **THE AMERICAN ANALYST** for only **$1.50.** Subscribe now and get this great premium. If your subscription has not yet expired, it will make no difference, for it will be extended one year from date of expiration. We will also give a set of Dickens', as above, free and post-paid, to any one sending us a club of three yearly subscribers.

ADDRESS:

THE ANALYST PUBLISHING CO.
No. 19 PARK PLACE,
NEW YORK.

TABASCO PEPPER SAUCE,

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced by connoisseurs to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY'S SON,

NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

NATRONA BI-CARBONATE OF SODA.

(ABSOLUTELY PURE.)

NATRONA TRADE MARK SODA

The nature of the raw material from which NATRONA BI-CARBONATE OF SODA is made—viz., kryolith, a mineral containing *pure sodium*—insures a purity and uniformity of product which cannot be obtained from any other known material. In making BI-CARB. SODA from any other raw material, the use of sulphuric acid is a necessity, but none is used in any part of the process of making NATRONA BI-CARB.; hence its entire freedom from the slightest trace of arsenic, which is always present in ordinary soda. Its absolute purity and entire freedom from all traces of *sulphate of soda*, common salt and other impurities, render NATRONA BI-CARB. NEARLY TASTELESS, and being bolted through the finest bolting-cloth, insures the finest stage of division.

To these indisputable facts the attention of CONSUMERS of soda is specially called. They are IMPORTANT, and should influence both those who use and those who sell soda, to buy and sell NONE BUT THE BEST.

The NATRONA BI-CARB. Soda is kept in stock by almost every wholesale druggist and grocer throughout the United States, of whom it may be ordered.

Natrona Bi-Carb. Soda is unequaled by any other brand of English or American Manufacture.

PENNA. SALT MANUFACTURING CO.,

NATRONA CHEMICAL WORKS. PHILADELPHIA, PA.

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

To Subscribers, Readers and Advertisers.

SUBSCRIBERS' attention is called to the great variety of interesting and instructive subjects treated in this number. We respectfully ask the co-operation of our subscribers in extending our Subscription list, which will enable us still further to increase the value of the AMERICAN ANALYST to them.

The CASUAL READER is specially requested to examine our liberal premium offer.

ADVERTISERS who do not know of this Journal already, are respectfully referred to article headed "A Business Benefit."

ALL are kindly requested to peruse this number thoroughly.

The AMERICAN ANALYST can be had at any news stand in the United States. Any newsdealer will take orders for it, the American News Company being our wholesale agents. All postmasters will receive subscriptions.



RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,
184 Greenwich St., N. Y.

DO YOU KNOW THE **DANGER** OF USING SOAP?

IF YOU ARE GOING TO THE COUNTRY, DO NOT FAIL TO READ THE FOLLOWING.

We do not mean soap made from proper material; and when we tell you that about ninety-nine per cent. of Toilet Soap is made from refuse fats gathered from tenement houses, hospitals, butcher shops, and from cattle dying of disease or during transportation, you will, we believe stop and think. Putrefactive changes have taken place in most of this material, as it is mixed with lean meat, blood, bones, sinews, etc. There is at least *one* soap that is made wholly from vegetable material—OLIVE and PALM OILS—and that is

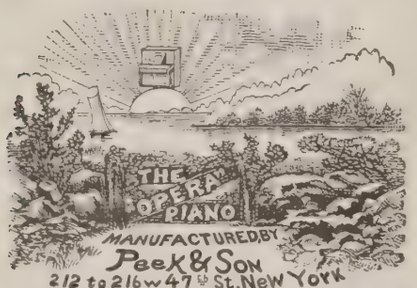
VELVET SKIN SOAP.

It will keep the skin soft and in a healthy condition, as no animal fats are used in its manufacture. Nothing in one's personal outfit is quite so satisfactory as a thoroughly reliable Toilet Soap. We are confident that a trial of this article will insure its continued use. If the dealer does not keep it, do not take any other, but require him to order it for you, which he can do readily. **Otherwise, send to us direct.**

MANUFACTURED BY

REED & CARNRICK, Manufacturing Chemists,

417 GREENWICH STREET, NEW YORK.



A HIGH-GRADE PIANO

AT A VERY MODERATE PRICE.

NEW DESIGNS. FANCY WOODS.

Terms Easy. + Monthly Instalments.

TWO, THREE AND FOUR PEDALS.

Catalogues, Prices, Terms, Etc., sent to any address.

EVERY PIANO WARRANTED 5 YEARS.

(Mention this Paper.)

THE LABORATORY.

To Inventors, Manufacturers and Applicants for Patents

The AMERICAN ANALYST may be consulted upon all matters involving theoretical or applied chemistry. Advice and opinions given. Analyses and assays made. Patents perfected and secured. Terms reasonable.

Address, AMERICAN ANALYST,
10 Park Place, N. Y.

SWIFT'S

CHOICE

Chicago Dressed Beef

AND

MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,

UNION STOCK YARDS,

CHICAGO, ILLS.

THE ORIGINAL AND GENUINE
(WORCESTERSHIRE SAUCE).



LEA & PERRINS' SAUCE

In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—

Beware of Imitations; see that you get Lea & Perrins'

Lea & Perrins

For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS. NEW YORK.

GLENN'S
SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,

C. N. CRITTENTON,

115 FULTON STREET,

NEW YORK.

WHAT A DIME WILL DO!

Every BOY and GIRL who loves to read splendid Stories, Sketches and beautiful Poems, should subscribe for the AMERICAN YOUNG FOLKS, a beautiful Illustrated Monthly Magazine, established in 1875. Its stories are the Very Best that can be obtained from the Foremost Writers of Juvenile Literature, and every issue is filled with good things. The regular subscription price is $1.00 a year, but if you will **Cut this out** and return it to us with **a Silver Dime** and your name and address, we will send you the Magazine Six Months on Trial. Address,

AMERICAN YOUNG FOLKS, Manchester, N. H.

The Standard of Excellence.

KINGSFORD'S

OSWEGO

Pure and Silver Gloss



STARCH

KINGSFORD'S

OSWEGO CORN STARCH

FOR

Puddings, Custards, Blanc-Mange, Etc.

THE PERFECTION OF QUALITY.

WILL PLEASE YOU EVERY TIME.

Always ask your Grocer for these goods.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 37. NEW YORK, THURSDAY, SEPTEMBER 10, 1891. WHOLE No. 237

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - - $1 per year.
Single Copies, - - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.
Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.
Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,

H. LASSING, M. D., *Editors.*
T. P. McELRATH,

No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

Beneficial Habits 437
Bright Stories—A Strange Temptation 436
Cooking Education 438
Domestic Dietetics 438
Editorials 433
Life Insurance; Undesirable Citizens; The Incandescent Light; An Evaporated Phenomenon.
Historic Heat 435
Lightning 434
Modern Light 434
The Cork Oak 435
The World's Temperature 438

LIFE INSURANCE.

It seems to be the practice of life insurance companies to confine all information concerning themselves to the columns of the so-called insurance press. As the circulation of these insurance journals is strictly confined to the narrow limits of the companies' offices and waste baskets, with the exception of such copies as may contain a particularly venemous attack upon some company, and which are marked and mailed where they can do the most good, the great mass of the public has to depend otherwise for all information upon such circulars as the companies have carefully prepared for them, and the more or less vague statements of their hosts of canvassers. Life insurance is an important adjunct of modern social life, and more should be known about it. Any company which does its business honestly and honorably surely can have nothing to gain by concealment; while, on the other hand, there is everything to be gained by the most open discussion of the whole subject. The question naturally arises, Have the companies nothing to conceal? Is everything conducted fairly and squarely? When we read in the daily papers that one large life insurance company is daily accused of everything else but honest dealing; that they employed an important official for many years, who has for years been making charges of dishonest management, and added weight to these charges by openly asserting that the committee of the board of trustees of that company appointed to investigate his charges was a whitewashing committee; and to clinch it wrote letters to the public press, and stated in interviews, that there were other and more serious charges not made yet. When, in addition to all this, we see that only after several years and reiterated charges this official was finally dismissed from the service of the company, we seriously question if any further official action can regain lost public confidence. There has not been time yet for the dismissed official to have his say, and that he has a gun loaded to the muzzle there can be no doubt. In the meantime, other life insurance companies are looking on, enjoying the fun. While the public attention is attracted to their competititor, they think they are safe from too close watching or newspaper comment. They understand the case fully, serious charges have been made against a competitor—will there be similar or worse charges against themselves next? Have they any glass in their houses which they need fear will be broken? How many of our large life insurance companies would like a thorough, capable and honest accountant to go through their accounts and books? How many would be able to stand by cooly and have their dividend systems or investments thoroughly examined? Life insurance companies handle vast sums of money; they receive it from many people and pay it out to a few, and generally to women, who, when in their distress at the loss of a beloved one, are not so apt to examine closely the correctness of the account. They look for a specified amount, and if paid that with reasonable promptness expect nothing more, though they may be justly entitled to double and treble the amount. The man who has denied himself for years that he may be able to lay up something in the way of insurance for the loved ones he leaves behind him finds himself suddenly confronted by a financial disaster, he must have money at all hazards. There is nothing so easy as to sell his policy to the company, for he argues, when over this trouble he can soon provide a new insurance. Do the officers of the company seeing his pressing need and his readiness to take anything, give him all he is justly entitled to? The life insurance company is a soulless corporation and often its officers have been found just as soulless. They have the handling of large sums and no very close scrutiny is had upon their methods. A man takes a policy and pays all he is asked, and when he dies his widow is left to the mercy of a so-called adjuster whose sole business in many of these companies it seems to be to find all the flaws he can in the proofs of death that have been filed with the company, and by inuendos, and covert threats try to cut down the amount that should be paid without question. All this is wrong—we have already spoken of the fact that most of the life insurance companies confine any published information to the insurance press. Why is this? Is it because they are afraid that if they do not liberally support the insurance press they will be attacked and cannot stand the attack? Why is all the life insurance advertising in the daily press confined to a bare statement of the names of the company, the officers and the trustees with the exception of perhaps once a year, a so-called statement which is all Greek to the majority of the public. If the life insurance companies desire the confidence of the public, and without that they cannot get the business, they must be more liberal in imparting information, in educating the public up to their methods; they must so treat a man that it will cease to be a common by-word that to leave a life insurance to your widow is to leave her a law suit. Perhaps they think they have all the business they can get. It may be so under present circumstances, but if the great mass of the public could feel that the companies were doing business honorably and above board there would quickly be a large increase of policies over the beggarly proportion now carried. Our population has increased, but life insurance has not increased with it. It should have increased largely.

UNDESIRABLE CITIZENS.

An average of a million immigrants a year have landed in the United States during the past five years, of whom fully one half were of the lowest grade of the laboring classes. A large proportion could neither speak, understand, nor write English—they were Italians, Portuguese, Hungarians, Russians, Poles, and Scandinavians. Of the Italians, the Portuguese, and the Hungarians, the greater proportion are in no degree qualified for homes in this republic; they are of baneful nature and vicious methods of life. They most injuriously cheapen labor and cause disorder, provoke turbulence, and disturb the general peace and good order. The German communist and Russian nihilist are incendiary and insurrectionary, in measure mischievous and dangerous, but they are not assassins of the Mafia stamp, nor do they trouble the fields of labor to incite strikes or influence the laborers to riot and armed violence. To swill with beer and foam, to fume as they quaff fiery spirits, is the extent of their vaporing, the extremity of their disorderly demonstrations. They spill no blood, rarely destroy property. They do not make good citizens, and, therefore, are not desirable and are not wanted or welcome to this country. The Chinese and the natives of Asia are intolerable; but the hordes from Europe are immeasurably worse. The Chinese are inhibited from citizenship and can not become voters, while the courts grind out the refuse and scurf of Europe in naturalization, and invest with the elective franchise the scourings which should be

committed to the prisons. The continuance of the evil will virtually disfranchise the mass of intelligent, earnest citizens by the overflowing vote of corruptionists, as they purchase and dragoon their bought and submissive bands and gangs at the polls to force and win the infamy of victory. Congress should take the matter in hand and put a stop to this indiscriminate, pestilent immigration. A radical reformation of the law governing immigration is absolutely demanded.

THE INCANDESCENT LIGHT.

The growing adoption of the electric light in private houses as well as in places of public resort renders it of interest to briefly elucidate its precise nature, and to dissipate certain obscurities which obtain in regard to it. It "burns" steadily is a very common expression. But "burning" is the very thing it does not do. There is no "burning" without oxygen; and the incandescent lamp is first exhausted of air, and then hermetically sealed. What in rough and ready language is called "burning" is only the white-heat glow produced by the resistance which the fine carbon filament in the lamp offers to the passage of the electric current. The copper wire through which the currrent "flows" from the generating machinery is also the medium through which the current returns to the machinery. If the wire were continuous, there would be no sign of the current, for, the copper being a good "conductor," the current flows through it without resistance. But for lighting purposes you sever this wire, as it were, and the non-conducting carbon filament inside your lamp is but an obstacle through which you compel the current to pass in its race from the dynamo and back. The resistance offered by the carbon produces the white-heat glow. But, as already said, to call it "burning" is inaccurate. The friction between two substances produces an analogous phenomenon; but only analogous, for the sufficient reason that electricity is not a substance, but only a special form or manifestation of force. There being no "burning" there can be no contamination of the air in the room. The substitution of electricity for gas is, therefore, a hygienic improvement of incalculable value.

AN EVAPORATED PHENOMENON.

The famous overflow of the Colorado River in San Diego County, California, on June 27, does not seem to have produced the permanent topographical changes in that region that were expected. Information from Salton, of the date of August 24, states that little by little the Salton Lake sensation is dwindling away, and the great inland sea is becoming a mere film of water over the surface of the salt basin. And it seems that even that is nothing new. There always has been a lake in the Salton basin, and the water is only four inches deeper than it has been to a certainty every August since 1870, and probably every August for many years before that. Recently there were thunder storms and cloud bursts in the southern counties, and the Salton Lake boomers declared that such things were unprecedented, and that the presence of the great body of water had changed the climate. Thunder storms and cloud bursts are in fact regular August occurrences south of Tehachopi. The rainy season of Arizona is July and August, and in those months great masses of rain-laden clouds come trooping across the desert and break against the mountains that form a bulwark between the San Joaquin Valley and the Mohave plain. These cloud masses are called 'Arizona runaways," and are said to be as familiar to southern Californians as are the names of the months in which they make their appearance. An exploration of the much advertised lake made, during the last week of August, showed that the alleged sea had then evaporated to only a strip of water about 300 yards wide surrounding a great body of salt. The water over the salt bed was less than four inches deep. The overflow from the Colorado brought in the amount of water represented by that four-inch film over the basin. When the lake was at its deepest the area covered was thirty miles by ten, and the greatest depth in the edge strip was four feet. The conditions in the basin are the same as usual, except that there is a shallow film of water over the surface instead of just beneath the crust, and that, it is expected, will soon disappear by evaporation, leaving perhaps a strip of 300 yards wide and twenty miles long. All the excitement was due to the fact that the water in the Colorado was higher than usual, and more of it than was customary flowed through the break and over the desert.

MODERN LIGHT.

A GERMAN OPINION ON ELECTRICAL ILLUMINATION.

From Grecian mythology we learn that Prometheus stole fire from heaven where the gods guarded it jealously. Prometheus? Presumably some great discoverer, the Edison of a prehistoric age. What he then achieved may have created just as much admiration and wonder as we experience at sight of the incandescent American lamps. How have these wonders been achieved? Even in old Homer's time tallow candles were a little known luxury, and Ulysses returning to Ithaca, to the halls of his fathers, surveys the wine-stained countenances of his companions in the ruddy glare of flickering chips and bundles of twigs. How different now! A cascade of brilliant rays radiate from flowers of fabulously wondrous beauty, with incandescent lamps in their interior, falling on facets of crystal glass, on mirrors, on gold frames, on marble statuary, and porcelain figures, covering them all with a halo of splendor. We are in the age of electricity! Electricity! The word suggests a secret revelation of the wonders that surround us—a dream of new powers with which science will invest us; a new authorization of man to assume control over nature, and to mould the conditions of his existence into richer and more attractive forms. And now, how do we produce this uncertain, immaterial substance that can dazzle like the sun and strike like the lightning? Its origin is as incomprehensible as its character. The mere contact of two metals produces electricity, the friction of two bodies upon each other, whether they are hard like glass, or fluid like water, the heating of certain mineral crystals, the revolution of one glass disc upon another under certain prescribed arrangements; all these generate electricity. Everywhere in earth, air, fire, and water, we are confronted with the evidence of the presence of this uncertain force, which appears only to disappear in the great body of the all-mother earth from whose womb issues all that lives or breathes: to whose womb whatever has life, or force, or energy, must sooner or later return. For industrial and illuminating purposes, electricity is produced by means of dynamo machines. The fundamental idea of these wonderful contrivances is that wire spools are maintained in revolution past strong magnets. Whenever the spools approach or withdraw from the poles of the magnet, a current of electricity originates in the wire. To keep a wire spool revolving past a magnet would be amusing child's play if there were no hindrance, and electricity might be generated very cheaply in a continuous current; but with the increase of the current in the wire spools, there is generated a corresponding antagonism between the magnetism of the iron magnet and the electricity of the wire. The wire strives to go over the shaft, but to enable it to do so, a force is required proportionate to the force of the electricity generated. This required force is supplied by motors, steam engine, wind mill, water wheel, or other power. In a central station for lighting a city or quarter of a city, we witness a whole series of direct transformations of power from one form into another. Coal is burnt, and the heat thus generated converts water into steam, and gives the steam elasticity. This elasticity operates the machine, precisely as men or horses might, in fact, it performs labor; and this labor employed in revolving the wire spools, generates or is converted into electricity. The whole series of processes may be reversed, and electricity converted into heat for cooking, or into power for operating machinery. Endless are the applications of which electricity is susceptible, for electricity, heat, light, steam, the chemical union of elements are all intimately related; they are capable of performing labor precisely as labor is required for their production. Light, although seemingly so unsubstantial and powerless, is labor, and requires force to generate it as much as wood chopping or verse making. Every ray of light that vibrates in space is as full of force and energy as the axe of the woodcutter in its swing. Every ray that comes to us is the product of chemical labor applied to distant stars by elements such as oxygen, carbonic acid, etc., in the fierce tumult of chemical union and decomposition. Even to this day savages generate fire by the sweat of their brow through the rapid continuous friction of two bits of wood. The day will assuredly come in which electricity will be generated directly from the heat of burning coal without the intervention of steam or dynamos; something has, indeed, been already achieved in this direction. Berlin may be said to be the birthplace of dynamo machines, as well as of the electric railway, and of other achievements in electro-technology in which department the illustrious name of Siemens is unrivaled. The Berlin Electric Works include five central stations, in which the needed electricity for the supply of the city is generated. In March, 1889, there were in the capital 3,714 arc lamps and 62,876 incandescent lamps in operation. For motor and illuminating purposes, the five central stations distribute about 8,000 horse-power which will shortly be increased to 18,000. Eighteen thousand horse-power! What an enormous force. To realize its immensity one requires to institute comparison with a past like that of Egypt, whose mighty pyramids were erected by human hands. Such work would be mere child's play, comparatively, in this age. Why, Berlin's electric force at this moment performs labor equal to that of 70,000 men. The existing steam-power of the world is estimated at 6,000,000 horse power, equal to 50,000,000 laborers. Where now would be the progress in our culture if we were dependent on muscular force? Labor is capable of producing not only physical light, but, being economized, may be converted into spiritual or intellectual light; thus machinery, not merely economizes production, but ministers to the material and intellectual progress of the race.—*Vom Fels zum Meer.*

LIGHTNING.

THE MODERN METHOD OF SECURING PROTECTION.

Recent scientific study has swept away some of the old notions about conductors. The method now considered the best for the protection of buildings is to provide a metal roof, with an ample number of metal conductors leading to the ground, which will receive and carry off the electric bolts from the clouds. Copper is the best material, but tin or iron will answer the purpose; and I always suggest the placing of the conductors at the corners of a building, so that all parts will be equally protected. Though rods may be used, rain spouts will answer the purpose equally well. The physical laboratory of the Johns Hopkins University is protected from lightning by the roof and spouting. You can safely class all patented lightning rods as being of little value beyond conducting rods that any man can put up himself, because the simple principle underlying all is that the lightning will follow the best conductor. The idea so largely adopted in the erection of lightning rods, that a small band of glass will prevent the electric current from passing to a better adjacent conductor, seems playful. While it is true that light-

ning is attracted to an elevated point or angle, when you cast your eyes over a city like Baltimore, and see the large number of such points and angles, the use of pointed rods fades into insignificance as compared with the method of roofing with a good conductor. This was illustrated by the incident of lightning striking the great monument in Washington several years ago. The monument is capped with a piece of aluminum, which has metallic connection with the ground by means of the iron work of the interior, but the lightning did not strike the top of the cap. It descended to some copper mixed in the side of the pyramidal top, some distance from the apex, burst a portion of the stone, and, running along the copper into the interior, leaped without any metallic connection to the iron framework and passed to the ground. A framework of copper rods, covering the angles, and crossing the sides of the immense cap, was recommended by me at that time for the future protection of the monument, and has probably been constructed. The ground connection was to be through the internal iron work spoken of. Somewhat similar to these methods is that of the Peabody Library. The iron shelving connected with the metallic roof, and resting on a stone foundation which might be shattered by a stroke of lightning, has been connected with the ground by metal conductors, and no danger from lightning is apprehended. Lightning has no fixed portion of a building to strike. The stroke may fall at the centre of the roof, and while it runs along the surface of a body, the body may be broken or crushed by the enormous pressure brought to bear upon it, in the same manner that an explosion of dynamite or nitro-glycerine would cause a fracture. I have some fragments of a church spire struck by lightning, which are bound together in their former relative positions, but exhibiting all the fractures produced by the concussion. There is a vast difference between the quantity of electricity and what is known as electrical pressure. This is illustrated in a simple manner by the compression of the air. A small quantity of air can be compressed to the same degree to obtain as great an expansive force as a large quantity. The quantity of electricity in a stroke of lightning is not nearly as much as passes along almost any electric wire on the street, but the voltage or electric pressure of the street wire is rarely 3,000. A volt is the basis on which the pressure is estimated. The voltage of the lightning stroke is roughly estimated at 6,000,000,000 volts. In addition to this appalling difference, it may be said that the current of the wire is constant and continuing, while the lightning dart is delivered in the one two hundredth part of a second. Such an astounding force is capable of doing many strange things. In speaking of places of safety during an electrical storm, Dr. Rowland said that probably as safe a place as any other would be an iron bedstead, provided the ground connection is perfect—this being in line with the above theory, that the lightning would follow the best conductor.—*Baltimore Sun.*

THE CORK OAK.

A NEW INDUSTRY FOR CALIFORNIA.

Every year adds something to the diversity of the products of Californian soil and climate. No fruit, flower, shrub or tree known to the temperate zone that does not here find a genial abode, while semi-tropical and even tropical products vie with the hardier vegetation of the colder zones in the measure of their lusty growth and generous fruition. And now comes the cork tree to the front to claim its share of public attention as an important source of wealth, for future generations, at least, in this land so favored by nature and so lavish in its rich gifts to man. That it will flourish and produce its velvety bark here in prolific perfection, the evidences of many a tall and vigorous cork oak now growing in various localities in the State prove beyond doubt or cavil. That few among the earlier settlers in California may live to see the production of cork as an article of manufacture and commerce attain any considerable degree of importance may be true; but that it has become the bounden duty of present generations to plant the seed that posterity may reap the harvest, is a proposition that no reasonable man will care to dispute. So far, individual enterprise has estabilised the fact the cork oak (*Quercus Suber*) has here found a congenial home. We have heard it stated that General Bidwell has recently sold, in the San Francisco market, a considerable quantity of cork bark of the finest velvety quality, the product of trees upon his property at Chico. In a recent visit to Ione, in Amador county, we saw a cork tree, raised from an acorn planted thirty-two years ago by Mr. Surface, of that town, the bark of which, on cutting it away, seemed to be of the very best quality of "velvet cork," and would no doubt command a high price in the market. It would appear, therefore, that the soil and climate of California are better adapted to the growth of this tree than those of Spain and Portugal even; for there the first yield of cork bark "is rough, unequal and woody in texture, is called virgin cork, and is useful only as a tanning substance or for rustic work in conservatories, etc." The fact therefore having been demonstrated that the tree will grow in California, and will produce as good, if not a superior bark to that elsewhere found, the question presents itself: What is the duty of the State, through its legislative and executive authority, in the matter of fostering the planting and cultivation of the cork tree? If California is to become the great wine and brandy producing country that it promises to be, the question of the future supply of corks to meet the demand for home consumption alone becomes of the most serious importance. Moreover, the collateral question of creating a new product that is to increase the future wealth of the State adds largely to the magnitude of the subject under consideration. In the six years from 1880 to 1885, inclusive, Spain and Portugal exported manufactured and unmanufactured cork to the value of $23,658,453, beside what was used in home consumption to supply the large demand for wines, etc., produced in those countries. Why should not California take first place in the future in the product and manufacture of this important article of commerce, and so not only keep at home the large amount of money that will otherwise find its way abroad in the purchase of the foreign article, but also reap the harvest of profit that will be derived from its own exportations to supply the always growing demand of the world at large?—*Argonaut.*

HISTORIC HEAT.

SOME HOT DAYS BEFORE HUMIDITY WAS INTRODUCED.

In 1303 and 1304 the Rhine, Loire and Seine ran dry. It seemed as if New York was on fire in 1853. The thermometer ranged from 92 to 97 degrees for five or six days. During the heated term 214 persons were killed of sunstroke. In France in 1718 many shops had to close. The theatres did not open their doors for three months. Not a drop of water fell during six months. In 1773 the thermometer rose to 118 degrees. The heat in several of the French provinces during the summer of 1705 was equal to that of a glass furnace. Meat could be prepared for the table merely by exposing it to the sun. Not a soul dare venture out between noon and 4 P. M. In 1800 Spain was visited by a sweltering temperature that is described as fearful. Madrid and other cities were deserted and the streets silent. Laborers died in the fields, and the vines were scorched and blasted as if by a simoon. The year 1872 was a fearful one in New York. One hundred and fifty-five cases of sunstroke occurred on July 4th, of which seventy-two proved fatal. The principal thoroughfares were like fields of battle. Men fell by the score, and ambulances were in constant requisition. In 1778 the heat of Bologna was so great that numbers of people were stifled. In July, 1793, the heat again became intolerable. Vegetables were burned up and fruit dried on the trees. The furniture and woodwork in dwelling houses cracked and split and meat went bad in an hour. A disastrous hot wave swept through Europe in June, 1851. The thermometer in Hyde park, London, indicated from 90 to 94 degrees in the shade. In the Champs des Mars, during a review, soldiers by the score fell victims to sunstroke, and at Aldershot, England, men dropped dead while at drill. In July, 1876, intense heat began to make its power felt throughout the Middle and Southern States. In Washington the heat was frightful. General Sherman declares that the car rails became so expanded by the action of the sun as to rise up in curved lines, draw the bolts. In one instance the rails burst away from the bolts and left the track entirely.

INDIA INK.—India ink is made from fine lampblack compacted and cemented with glue. The finest black is derived from pork fat. The glue is made from buffalo hide.

ALPINE HOTEL BILLS.—The landlord is writing out the bill with the assistance of the head waiter. "Have you noticed that the gentleman in No. 7 looked at the weather vane every morning during his stay here?"

"Yes sir; every morning."

"Then we'll put down, 'For use of weather vane—three francs.'"

A NEW DEFINITION.—A teacher gave out words for analysis. "Banknote" was one of them, and the teacher's astonishment may be imagined when one young lady brought the following unique analysis: "Bank-note is a compound, primitive word, composed of 'bank' and 'note'. 'Bank' is a simple word, meaning the side of a stream; 'note,' to set down. 'Bank-note,' to set down by the side of a stream."

NEW DISINFECTANT.—A recent discovery, which is the outcome of the investigations of Dr. H. Oppermann, and which he has also patented, is the application of dolomite to antiseptics. The dolomite, after a special preparation, is mixed with a certain proportion of oxide of iron and iron pyrites, and the mixture is employed in the form of a powder. According to the experiments made at the Hygienic Institute, at Kiel, it seems likely to substantiate its reported efficacy.

DESIRABLE INVENTION.—A well known railroad man declares that one of the most useful inventions that can be thought of in connection with operative railroading is one that will automatically take the rear brakeman by the nape of the neck and shoot him back from the train a sufficient distance to protect it, when, for any reason, an unusual stop is made. He declares, as a result of considerable experience with the genus brakeman, that nothing short of this will suffice to make it at all sure that trains will be protected under such circumstances, because nothing short of some such device can compel brakemen to go back a proper distance with the flag or lantern.—*Industrial World.*

A GROOM'S CHECKBOOK.—A young man of fashion in Buffalo, who got married not long ago, did a unique thing A short time before the wedding he bought a new checkbook, and had lithographed obliquely across the face of each check his own name and his bride's maiden name in small letters and under them the word "Married," in bold characters, followed by the day and date of the wedding. The young man has used the checkbook solely for the payment of his wedding expenses—his new clothes, his gifts to the bride and wedding party, the antenuptial suppers, luncheons and river parties, the parson's perquisite, and all the bills incurred during the honeymoon, besides getting the checks cashed for his pocket money. At the end of four weeks from the wedding day he means to stop using these checks, collect all the vouchers, tie up all together, mark the parcel "Honeymoon Vouchers," and lock it up in a strong box, which is not to be opened until the silver wedding anniversary twenty-five years hence.

BRIGHT STORIES.

A STRANGE TEMPTATION.

Herbert Hendon, M. D., was fond of his profession, but he was a good deal fonder of horse-flesh. The tenth year of his London practice found him making a very considerable income; but, grievous to relate, by far the largest proportion of that income found its way, year by year, into the coffers of the bookmaking fraternity.

Never yet had he been a defaulter on settling day, but this had only been rendered possible by ignoring his trades-people's demands. There was no blinking the fact that he was considerably involved and did not see any way of escaping the Bankruptcy Court, save by some great and successful coup.

It was in 1887, just a week before Watts steered Merry Hampton to his Derby victory, that Herbert Hendon entered his consulting room, and rang his bell for the first patient to be shown in. He felt terribly down on his luck, for he had got what he believed to be a splendid tip for the great race, but knew not where to turn for money. He was in anything but a proper frame of mind to do justice to his patients on this particular morning.

However, as the door opened, he pulled himself together, rose and stepped forward with his usual bland welcome.

A young man entered, and, proffering his hand, sank with an air of much lassitude into the chair, to which the doctor motioned him. He was tall and very spare, with hollow chest, and his face an unwholesome pasty color. His breathing came short and sharp, and Dr. Hendon saw at a glance that this was anything but one of his "bread-pill" cases.

He listened attentively as his patient described his symptoms, and then proceeded to subject him to a rigorous examination. To make a long story short, he discovered that Gordon Paston was suffering from a practically incurable disease, and that the only thing to do was to prolong the few short years that were left to him to their utmost limit. He did not, of course, tell his patient thus. He merely hinted that the disorder might grow into something serious unless great care were taken with it, and that he hoped, after the course of treatment to which he proposed to subject him, that he would be able to set him on his legs again. He then wrote out a prescription, gave him a list of foods to be avoided, and expressed a wish to see him again in a week's time, after which he rose from his seat as a hint to his patient to be going, but Gordon Paston still sat on in his chair.

"Dr. Hendon," he said, after a moment's pause. "I hope you will excuse me when I tell you that I know very well what is the matter with me. I know, too, that you, with very proper kindness, have made light of the fatal disease from which I am suffering. I know, from more than one doctor, that it is only a question of keeping me alive for a few years. No, please, do not protest, but kindly hear me out in what I have to say. I do not want to pretend to you that I look with unconcern upon approaching death. Far from it. I am immensely enamored of life, and my capacity for enjoying it is as strong as ever. Now, I hope you will forgive me for the proposal I am about to make. I am a poor man—that is to say, my income is about £300 a year. My tastes are somewhat extravagant, and that is far from sufficient to satisfy them. My little income is derived from an invested £8,000, my absolute property. Now, what I propose to do is to apportion that capital sum to the remaining years of my life, of course with a sufficient margin to allow of my disappointing the undertakers for a bit, and to pay my just debts and funeral expenses. My only sister is married and very well off, so that I feel perfectly justified in leaving as few assets as I like. So you see, doctor, what I want you to do is to give me the very latest date up to which it is possible for me, under the most favorable circumstances, to live. Please do not be afraid of telling me the shortness of my tether, for you see the shorter time I have, the more merrily I shall be at liberty to squander my £8,000."

To say that Dr. Hendon was amazed at the calm calculation with which this man contemplated the near approach of death would be overstating the case. It takes a good deal to astonish a doctor who has been in continuous practice practice for ten years. But it was the first time in his life that a patient had begged him not to hesitate to fix an absolute period beyond which it was impossible for him to live, and he felt somewhat embarrassed at the request.

His patient noticed his hesitation, and said that perhaps he would like to give some further consideration to his case, as the issues were somewhat momentous. He would, if he wished, call again for the verdict the following morning.

This was finally agreed upon, and Dr. Hendon felt relieved at the postponement of what was to him a very unpleasant responsibility. The next day Gordon Paston was again his first visitor and the doctor subjected him to a further careful examination.

He then sat down and faced his patient.

"Your case, Mr. Paston," he said, speaking with deliberation, "is a peculiarly easy one for prognosis. The disease from which you are suffering invariably terminates fatally, as you are aware, and its duration can be predicted with the greatest confidence. Of course, in every disease, all modifying influences must be taken into consideration. Your age, your calm, philosophical state of mind, are all in your favor. An hysterical woman would probably be dead in twelve months. I think it is possible that you may live for three years, but extremely improbable that you can last for four. Indeed, I am convinced that four years is a very wide margin to give you, I have spoken plainly, believing that your desire was for strict candor."

Gordon Paston listened attentively to every word, and Dr. Hendon could not but admire the unmoved countenance with which he received his death sentence.

There was a short pause, and then the victim spoke.

"Your verdict, doctor, is much what I expected, and I hope you will forgive me when I tell you that I think you are mistaken in your estimate. Whether it is that I have a peculiarly sanguine temperament, I know not, but, although five doctors at least have told me the same, most, indeed, giving me even a shorter tether, I feel it impossible to believe in so speedy a termination to my life. Were it not so, my course would be clear. I should year by year sell out a thousand pounds' worth of my investments, and spend that sum in addition to the income accruing from the remainder, but, incredulous as I am I feel that I dare not run the risk of finding myself pennyless if I should survive my appointed time. Now, I have a proposal to make to you, doctor, somewhat of a sporting nature. I want to ask you to back your opinion against mine. I hope you will not think me impertinent, but it would ease my mind greatly if you would fall in with my suggestion."

He paused a moment, but Dr. Hendon motioned him to proceed, half guessing in his mind what the proposal was to be.

"Now, you say, doctor, that I cannot by any possibility live more than four years and consequently that, spending £1,500 a year, I shall not at most run through more than three-fourths of my capital. Are you then prepared, for the sum of £8,000 down, to guarantee to pay me £1,500 a year for the rest of my natural life? According to your estimate you are sure of clearing at least £2,000 and very possibly a good deal more; and, further, you will relieve me of a very great anxiety. Fifteen hundred pounds a year is ample for my wants. What do you say, doctor; is it a bargain?"

Gordon Paston little guessed as he spoke what a godsend this seemed to the doctor. With £8,000 down, not only could he satisfy all his creditors, but, what was more tempting, he would have available money in plenty to back his fancy for the Derby.

The long and short of it was that, after some discussion, a formal document was drawn up and signed, and £8,000 was handed over by Mr. Gordon Paston to Dr. Herbert Hendon in consideration of the latter undertaking to pay to the former for the rest of his natural life the sum of £1,500 per annum, to take effect from June 1, 1887.

As a further security, a guarantee was obtained from a complaisant brother of the doctor, who undertook to be answerable for the due performance of this undertaking in case he should fail to carry it out.

Dr. Hendon had proposed that the amount should be paid quarterly, but Gordon Paston had insisted upon the whole £1,500 being paid him down once a year, and that on June 1. So it was that the recurrence of that date came to be of considerable importance to both persons of our drama.

And the doctor backed his fancy heavily for the 1887 Derby; but, unfortunately for him, his money was not on Merry Hampton.

* * * * * * * * *

Nearly four years had passed, and the £8,000 had long ago found its way, in company with a very large proportion of his professional income, into the pockets of Dr. Hendon's creditors. During that period the passion for gambling that was in his blood had led him to speculate in the city, and, where before he had risked hundreds upon pigmies in pigskins, now he risked thousands in gold mines guiltless of gold, and in the stock of corporations which only had an existence, like the world of the transcendalist, in the brains of men.

Gordon Paston was now in the last stages of his disease, but there was little doubt that he would live over June 1, when another £1,500 would be due to him.

Between him and Dr. Hendon during these three years there had sprung up a very close and intimate friendship. Indeed, excepting the latter's financial difficulties, they hardly had an interest which they did not communicate. Gordon Paston was a man of exceptional culture, intensely sympathetic, and in touch with the intellectual and artistic movement of the times, though unable, on account of his failing strength, to associate actively, as he would have loved to do, with the men and women who were workers. Dr. Hendon, on the other hand, was essentially the man of action—a platform speaker, a diner-out, a man who made his presence felt on councils and committees. He was the true complement to his friend and patient, and the happiest hours of both were spent in each other's company.

Often and often during the past year, when his strength had been more rapidly failing, had Gordon Paston forced his friend to the discussion of the physical aspect of death, and more than once he had insisted that when the last pangs came on and all joy of living was inevitably passed, there might be a more unfriendly action than that of a gentle and painless acceleration.

It was in the last weeks of May, 1891, that Dr. Hendon found himself involved in the most hopeless financial difficulty. Tradesmen were growing clamorous. Bankruptcy proceedings were threatening him on all sides, and, to crown all, the £1,500, due on June 1 to his dying friend, had to be found.

More than once Gordon Paston, all unconscious as he was of Hendon's financial difficulties, had laughingly said to him that he would do him out of another year's income. Indeed, the last time they had met he had said:

"Mind, old fellow, you have your check written for the 1st," and Herbert Hendon had sworn that nothing should make him forget it.

And as he had left the house he had said to himself with a groan:

"Would to God I was in that dear man's place; but, thank God, he is not in mine! Hell can, indeed, begin this side the grave."

On the 25th of May, just a week before the fatal day, he was paying his daily visits.

Gordon Paston was now failing rapidly. Indeed, for the last two months it had been evident that the end was approaching. His sister, Mrs. Fairfax, was in constant attendance upon him.

"Hendon," he said, as soon as they were alone that evening, "I have a little matter of business I want to speak about to you. My sister, Mrs. Fairfax, has been most awfully good to me, and I should like much to give her a little pleasant surprise. Now you know, as I told you four years ago, I felt justified, because of her husband's wealth, in not having any money available at my death for legacies. But, as a matter of fact, one of her boys is a godson of mine, and I think it would gratify her immensely if I presented her with the sum of £1,500, which will be due to me from you on the 1st of June, for the boy. Do you see?"

"I see," said the doctor, with a chill at his heart.

"And, old fellow," continued Gordon, "I want you to do me the favor of writing me your check now, post dating it, of course, for June 1st, this day week. I should like to have it by me, ready to put into her hand on the morning of that day."

"Oh, certainly," said Hendon, for he felt, in his apprehension, that any hesitancy on his part to comply might divulge his secret, and the last thing he could bear would be the forfeiture of the friendship and respect of Gordon Paston just now, when their parting must be so near.

So down he sat, with as much sang froid as he could muster, and wrote a draft for £1,500 on an account which could not boast one quarter of that amount. How it was to be swelled to that sum within the course of a week he had not the remotest idea.

On May 31st Dr. Hendon received an urgent summons from Mrs. Fairfax.

On his arrival at the house he was informed that his patient had passed a very restless night, and in the early morning had fallen into a state of unconsciousness. Dr. Hendon at once knew that the last stage of the disease had arrived, and that the prolongation of life was a mere question of hours. There might be a temporary return of consciousness, he said, but he could do little for him. Yes, if Mrs. Fairfax wished, he would call in again the last thing at night. All through that day Herbert Herndon was on tenterhooks—he knew that it was just touch and go whether Gordon Paston would live over the night. If he did, the draft for £1,500 would become due to him, his heirs, executors or assigns, and he, Herbert Hendon, would be a ruined man. The anxiety was cruel. A few labored and probably unconscious breathings more or less meant to him immediate ruin or temporary salvation.

By the time his 8 o'clock dinner was over, after which he had promised to call, Dr. Hendon had worked himself up into a high state of nervousness.

Mrs. Fairfax met him at the door.

"Yes, he is still breathing, poor fellow," she said, in answer to the doctor's inquiry, "but that is all one can say. At 5 o'clock he regained consciousness for about half an hour."

"Did he speak at all?"

"Yes, he asked me what day of the month it was, and, when I told him May 31, he said: 'Oh, I do hope I shall live till to-morrow. That'll be the 1st of June.' He said little else except that he had made a will which would be found sealed up in his desk. Almost the last words he said were: 'Hendon was right and I was wrong. I should like to thank Hendon for all his kindness to me.' He said nothing else besides giving a few tender and thoughtful messages for my husband and children, whom he feared he would never see again."

Whether this meant that mention had been made of the intended gift Hendon could not tell.

By this time they had reached the sick-chamber. The doctor saw at a glance that the end was very near.

At that moment a neighboring church clock struck the hour of ten.

The sick man stirred uneasily, and threw his arms about. Dr. Hendon took his wrist in his fingers and felt the pulse. It was scarcely perceptible. Yes; a little stimulant might fan the flickering flame into a few hours of life. Yet he hesitated. What were a few hours of unconscious life worth to him?

"I fear we can do nothing," he whispered to Mrs. Fairfax. "The end is close at hand."

"Stay with us till it is over, doctor."

Dr. Hendon bowed and sat down by the bedside.

There was a deep silence in the room, only the clock's tick-tack could be heard, and Dr. Hendon yearned toward the sick man who lay there in his helplessness, and whom he had learned to love so well. The devil whispered, "He told you not to keep him alive when it was only pain to breathe." And the doctor settled himself down to wait. But his conscience would not let him rest. The man in him got the better of the devil.

He rose.

"I think," he whispered to Mrs. Fairfax, "we might see what a little stimulant will do for him."

At 8 o'clock in the morning of June 1, Dr. Hendon walked home through the deserted streets. But an hour before he had received a last word of thanks, a last pressure of the hand, a last loving, trustful look from the fast-glazing eyes of his friend—and, as he walked alone, he thanked God that he had deserved that look of trust; that it was with an honest pressure of the hand that he had encouraged his friend across the shadowy valley. Guilty though he had been of almost criminal folly in monetary transactions, led away though he had allowed himself to be by the lust for gambling, liable though he was (as soon as legal formalities could be gone through) for £1,500 to Mrs. Fairfax's boy, he yet trod the pavements with a light-heartedness which he not felt for many a long day. He had at least proved himself a friend faithful unto death. There was at least a particle of self-respect left to him.

* * * * * * * * * *

A week later he attended his late patient's funeral, and was invited to be present at the reading of his will. The only part which in any way concerned him was as follows:

"I give and bequeath to my dear friend and medical adviser, Herbert Hendon, the moiety of the sum of £20,000, due to me in reversion at the death of my great-aunt, Priscilla Paston, in consideration of his faithful care of me since May, 1887, and the disinterested manner in which he has prolonged a life, in more ways than one, a burden and oppression to him. Sanguine as I am that my life will by his skill be prolonged considerably over four years from that date, I will that this bequest shall not take effect in case of my death occurring before the first day of June, 1891."

BENEFICIAL HABITS.

THE SECRETS OF BEING HEALTHY, WEALTHY AND WISE.

A very thin young lady, of about thirty years, with a promising beau, came to consult about her "skin and bones." I had frequently met her when she seemed even more emaciated, but now she "would give the world to be plump." Sitting down in front of me, she began with, "Don't you think, doctor, that I look old for twenty?" I admitted that she looked rather old for twenty. "Can anything be done for me? What can I take for it? I should be willing to take a hundred bottles of the worst stuff in the world, if I could only get some fat on these bones. A friend of mine (her beau) was saying yesterday that he would give a fortune to see me round and plump." "Would you be willing to go to the Cliff Spring in Arkansas?" "I would start to-morrow." "But the waters are very bad to drink," I said. "I don't care how bad they are; I know I can drink them." "I asked you whether you were willing to go to the Arkansas Springs to test the strength of your purpose. It is not necessary to leave your home. Nine thin people in ten can become reasonably fat without such a sacrifice." "Why, doctor, I am delighted to hear it, but I suppose it is a lot of some awful bitter stuff." "Yes, it is a pretty bitter dose, and has to be taken every night." "I don't care; I would take it if it was ten times as bad. What is it? What is the name of it?" "The technical name of the stuff is 'Bedibus Nine-o'clockibus.'" "Why, doctor, what an awful name! I am sure I shall never be able to speak it. Is there no common English word to it?" "O yes. The English of it is, 'You must be in bed every night at nine o'clock.' We doctors generally use Latin. 'Bedibus Nine-o'clockibus' is the Latin for 'You must be in bed every night by nine o'clock.'" "O, that is dreadful. I thought it was something I could take." "It is. You must take your bed every night before the clock strikes nine." "No; but what I thought was that you would give me something in a bottle to take." "Of course, I know very well what you thought. That's the way with you, all of you. One person eats enormously of rich food till his stomach and liver refuse to budge; then he cries out, 'O, doctor, what can I take? I must take something.' Another fills his system with tobacco until his nerves are ruined; and then, trembling and full of horrors, he exclaims, 'O, doctor, what shall I take?' I write a prescription for him—Quitibus Chawibus et Smokibus." I will suppose my patient is not a classical scholar, as I am sure my reader is, and so I translate it for him into English. He cries out at once, "O, doctor, I thought you would give me something to take." Another sits up till thirteen or fourteen o'clock, leads a life of theatres and other dissipations, becomes pale, dyspeptic and wretched, and then flies to the doctor and cries out, "O, doctor, what shall I take? what shall I take?" "Now, madam, you are distressed because your lover has been looking at your 'skin and bones.'" "But, doctor, you are entirely"—"O, well, we'll say nothing about him, then. But tell me what time do you go to bed?" "As a general rule, about twelve o'clock." "Yes, I thought so. Now, if you will go to bed every night for six months at nine o'clock, without making any other change in your habits, you will gain ten pounds in weight and look five years younger. Your skin will become fresh, and your spirits improve wonderfully." "I'll do it. Though, of course, when I have company, or during the opera, I can't do it." "It is regularity that does the business. To sit up till twelve o'clock three nights of the week, and then get to bed at nine o'clock four nights, one might think would do very well, and that at any rate 'so far so good.' I don't think this every other night early, and every other night late, is much better than every night late. It is regularity that is vital in the case. Even sitting up one night a week deranges the nervous system for a whole week. I have sometimes thought that those people who sit up to eleven or twelve o'clock every night get on quite as well as those who turn in early six nights, and then sit up once a week till midnight. Regularity in sleep is every whit as important as regularity in food. At length my patient exclaimed, "Doctor, I will go to bed every night for six months before nine o'clock if it kills me, or rather if it breaks the hearts of all my friends." She did it. Twenty-one pounds was the gain in five months. Her spirits were happily enlivened, and she spent half her time in telling her friends of her delight with her new habits. She had no further cause to complain of skin and bones, and she had the special gratification of appearing more attractive in the eyes of her lover. He, like a sensible man, when he saw the good effects of the nine-o'clock-to-bed arrangement, heartily approved of it, and became a convert himself.—*Dio Lewis.*

THE WORLD'S TEMPERATURE.

THE COLDEST AND WARMEST REGIONS OF THE EARTH.

The knowledge of the extreme temperature conditions of our earth is not only of especial interest in physical geography, but also of general interest. I have, consequently, undertaken a comparison of the two regions which are especially distinguished, the one by its icy cold, the other by its oppressive heat. At the same time it may be remarked that man has a great power of adaptation to extreme climatic conditions, without prejudice to the persistence of the organism. The mean lowest temperature that has been recorded is for inner East Siberia, whose climatic conditions are very high atmospheric pressure in winter, with calm air and a clear bright sky, conditions which favor radiation and result in the development of a high degree of cold. The lowest temperature is in the Yakutsk region, especially in the departments of the Lena and the Jana. Here the thermometer during the winter months—December, January and February—indicates a mean temperature ranging from 12 deg. Fahr. below zero at Pitlekaj, to 55 deg. below zero at Werchojansk—which latter, as far as our knowledge extends, is the site of the greatest winter cold on earth. The town of Werchojansk is situated in the valley of the Jana, about one kilometer from the river's bank. The river is enclosed by mountain chains, in the middle of which the town is situated. The position of the valley is favorable to long-continued calms, and the ground being nearly always covered with snow, the conditions involve a sinking of the temperature to so very low a level that the icy cold gives way for a few months in the year only to the intense rays of the summer's sun. In January the temperature ranges from 24 deg. to 80 deg. below zero, and in July from 40 deg. to 86 deg. Fahr. To enable one to form an idea of the extreme cold to which Eastern Siberia owes its evil reputation, it is only necessary to bear in mind that in the coldest winters in Germany the greatest extremes of cold are rarely below zero. In the American Polar region the extremes of cold have been registered at about 75 deg. below zero, but in Werchojansk, the minima throughout December and January are invariably below that point. In the Southern Polar region the extremes of cold cannot be compared with those in Siberia and North America. "It is not possible," says Middendorff, in writing of the climate of Siberia, "to describe the awful dismalness of the region under the dominance of such fearful cold. One must experience it to form a conception of it. The quicksilver is long solidified, and can be cut and hammered like lead. Iron becomes brittle, and axes are shivered like glass. Wood, according to the measure of moisture frozen in it, is harder than iron, and absolutely resists the axe unless thoroughly dry. The flames which elsewhere leap up from the hearth, here clasp the burning wood closely, as if the fire itself were freezing. Indeed, if a draft should for a moment urge the flames higher, they are at once extinguished, so cold is the oxygen which supports combustion. The crackling of the brittle snow under the footfall is heard at a long distance. The trees of the forest burst with loud cracks, which are answered by subterraneous bursts of thunder resembling the cannonading of a distant battery, due to the bursting of the icy covering of the earth, and of the hard frozen soil. It seems incredible that animal and plant life can flourish under these conditions but such is the fact." Let us now institute a comparison between this land of eternal ice and the hottest region of the earth. This will be sought naturally in the Tropics on either side of the Equator. In this region in which the sun at noontide strikes down its vertical rays, it might be inferred that the difference of temperature between day and night would be very considerable. This is really not the case, partly because the Tropic Zone is three-fourths water which sensibly reduces the temperature, and partly because of the rich vegetation which covers the land in the tropics. The humidity of the atmosphere in the tropics is remarkable, and this exerts a powerful influence on organic life. A temperature of 97 deg. Fahr. is very rare in the tropics, and this is occasionally exceeded even in our latitudes. But the effect upon man in the two cases is very different; a hot dry air can be borne without inconvenience, while if the air is moisture-laden the same temperature becomes almost unendurable. The characteristic climatic feature of the tropic region is a high and equable temperature with dense humidity of the atmosphere. A glance at an isothermal chart teaches us that the belt of highest temperature passes through Southeastern Asia, the interior of North Africa, Arizona, and the centre of Australia. If we consider the total sum of heat to which any one region is exposed in the course of the year without reference to extremes, the southern coast of the Red Sea is the region of hottest mean temperature as far as our observations extend. The mean temperature of Massowah ranges from 78 deg. to 79 deg. in January and February, to 95 deg. to 96 deg. in July and August, with a mean annual temperature of 86 deg, a daily variation of 10 deg to 12 deg., and a mean annual range of 14 deg. to 15 deg. These figures do not appear excessive, the highest mean temperature is occasionatly exceeded in other regions, but the continuous, nearly uniform, high temperature renders it almost unendurable for Europeans. Between Suakim and Massowah the temperature of the sea at a depth of 1,241 metres was found to be 70 deg. According to Rohlfs the temperature of the well water at 4 to 5 metres deep is 93 deg. to 95 deg. The atmosphere is moderately moist and the clouds rare. Only in the rainy season, in the first months of the year, is the moisture appreciably greater and clouds plentiful. The evaporation is considerable. Nothing can compare with the feeling of exhaustion which overpowers the European in these tropic lands and seas. The passengers by the Indian steamers come from their baths to the dinner table, their clean clothes already saturated with perspiration; and after dinner lie about the deck panting for fresh air, and sighing in vain for rest and relief in sleep.

DR. W. J. VAN BEBBER.

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

September.

GAME AND POULTRY.—Pigeon, chicken, duck, woodcock.

MEATS.—Beef, mutton, lamb, veal, ham, kidneys, liver, venison.

FRUITS.—Apples, bananas, blackberries, gooseberries, huckleberries, grapes, melons, oranges, peaches, pears, pineapple, plums, raspberries, currants.

FISH.—Bass, blackfish, bluefish, clams, cod, crabs, eels, flounders, halibut, herrings, lobster, mackerel, mussels, porgie, prawn, rockfish, salmon, trout, sea bass, sturgeon, turtle, white fish, whiting.

VEGETABLES.—Beets, beans, cabbage, carrots, cauliflower, corn, cucumbers, egg-plant, garlic, lettuce, onions, parsley, parsnips, potatoes, radishes, rhubarb, savoy, shallots, spinach, squash, tomatoes, turnips.

PRACTICAL RECIPES.

AMBER SOUP.—Fry with some bits of ham or bacon half a cup each of onion, carrot, turnip and parsnip. When they are a delicate brown turn contents of the pan in which they are into a soup pot and add a sprig of thyme and parsley, a bit of bay leaf, three cloves, and half a dozen whole peppers and cover with five quarts of stock. Simmer for an hour, then strain and clarify. Heat up again, season, add a tablespoonful of caramel and serve. If you have no stock on hand make a plain meat broth and proceed with the vegetables as above.

ONIONS IN BROWN GRAVY.—Peel and boil some small sweet onions and when tender pour off most of the water in which they were boiled and add some soup stock or beef gravy. After the onions have stewed in this for ten minutes take them out and keep them hot while you thicken the gravy with some browned flour. Boil up well, return the gravy and dish.

BROWNED PARSNIPS.—Mash two cups hot boiled parsnips and add to them butter, salt, pepper, and two large tablespoonfuls of cream or milk. Stir together until it boils, then put it in a buttered dish, cover with fine bread crumbs and dots of butter and brown in the oven.

ANCHOVY SALAD.—Take eight salted anchovies and wash, skin and bone them, then lay them in cold water and let them soak for an hour, then drain and dry them. Slice a couple of hard boiled eggs. Put the centre leaves of a fine head of lettuce in a salad dish, arrange the eggs and anchovies amongst it, pour a plain dressing over it and serve.

PLAIN DRESSING.—Three tablespoonfuls of olive oil, one tablespoonful of vinegar, the yolk of a hard boiled egg, pepper and salt. Mash the yolk with the salt and pepper, add the oil gradually, then the vinegar.

CHEESE RAMAKINS.—Grate half a pound of American cheese and half a pound of bread crumbs; soak the crumbs in half a pint of milk; put these in a mortar, add four ounces of sweet butter, half a saltspoon of white pepper, two saltspoons of salt and half a teaspoon of dry mustard; put the mixture in a bowl and add the beaten yolks of five eggs. Beat the whites to a stiff froth and add to the mixture. Heat and butter the gem pan, put in the mixture and bake twenty minutes. The mixture may be made stiff with flour, rolled into little cakes and baked on buttered paper.

BROILED SAUSAGES.—Split them in two lengthwise; place them between a double wire broiler and broil on the flat sides first, then turn and broil on the other; arrange a mound of hot apple sauce in the centre of a hot, flat dish, arrange the sausages upon it and serve.

COOKING EDUCATION.

A NEW SCHOOL OF COOKERY IN PARIS.

The following account of a new educational establishment for the training of chefs is furnished by the Paris correspondent of the London *Caterer*: "England has its National Training School of Cookery—why should not the classic land of *la cuisine* have a similar institution? One would have thought that in France such a school should have been founded years ago, whereas in reality Paris is one of the last cities to wake up to the importance of such an establishment. The fact is the French so long have considered themselves as the only born cooks in the world that they never thought it necessary to open an institution for learning this important art. Certainly, cooking is one of the glories of France, and when other nations wish to eat well they begin—as soon as their means permit—by engaging a French cook. However, it is a mistake to suppose that all French cooks are chefs, or that the mistress of every family understands the art of preparing nutritious food. The *maitres queux* themselves are of the opinion that French culinary art is declining, and that the population is dwindling away from anæmia and dyspepsia. Naturally, they do not ascribe this decline so much to their own shortcomings as to

the faults of their masters, and, above all, of their mistresses. Formerly, they say, the middle-class housewives, and even aristocratic ladies, did not blush at coming in contact with their cooks. To-day the mistress of the house takes very little interest in the practical details of the kitchen. Ladies consider that they have accomplished their duty in giving brief orders in the morning, and casting their eyes over the book of expenditures. This rapid examination, which is usually accompanied by severe criticism, discourages the cook in taking more than passing interest in his work. We are far from the period of Talleyrand, who declared that his chef, Gareme, had a large share in regulating the destinies of Europe. The old diplomatist never received guests at his table without first making a tour of the pantry, and casting his eye over the preparations for the repast. This is a historical fact. So much for the decline of good cooking in private houses. As for the degeneracy of the table in restaurants, it may be ascribed to the hurried mode of life of the present day. The gourmets are rare who have individual fancies or requirements that stimulate a chef to supreme efforts. Nowadays men rush into a restaurant, give their orders hurriedly, and wish to be served with all possible speed. Besides, there are a great many so-called chefs in private houses and restaurants who have never served any apprenticeship, whose cooking not only casts discredit upon the profession, but becomes a danger to the public health. A great many of these *gate-sauces* have little idea of scientific cooking, and seem to think that when they have prepared a showy dish they have made a wholesome one. This idea has prevailed so long among a number of would-be chefs that Anglo-Saxons in general share the opinion of the hearty Yorkshireman who had been spending some time in France, whose first exclamation upon landing in England was, "Give me a rump steak and a glass of beer; for the last 12 months I have been dining on ornaments." To react against this deplorable state of things in a country where the culinary art has held the lead for two centuries, the principal members of the French Cooks' Society decided some time ago to establish a professional school of cookery and alimentary science. The idea of the founders is to pursue a double end—to educate chefs who will maintain the renown of French cooking, and to show to middle-class and poorer housewives how they can prepare nutritious food by a moderate outlay. The work that these men have undertaken is a disinterested one. All the professors give, not only their time, but pecuniary aid, according to their means. The school is installed in a building by the side of the Ecole des Beaux-Arts. The building was formerly used by the Mont de Piete, and opens on a large courtyard, the entrance to which is in the Rue Bonaparte. On the ground floor is a dining room, a hall for lectures capable of accommodating 200 persons, opening on to a spacious kitchen, which is separated from the hall by a large table arranged with gas cooking stoves. Behind this table, and in the middle of the kitchen, is a superb cooking range, with all the latest improvements, while around are kitchen utensils in abundance. At one side of the kitchen, opposite the dining room, is a pastry cook's room, and another for cold dishes. Up-stairs there is a library of books and publications relating to the culinary art. The professional classes are held in the evening, and are destined to complete the practical education of apprentices who intend to become chefs, and are employed in private houses, restaurants, or other establishments where they obtain the rudiments of their profession. At the school they will pursue their education from a theoretical point of view, studying the history of their calling and of the dishes they prepare elsewhere, as well as the new inventions or improvements made by their teachers; they will extend their general knowledge of all that concerns their profession, and at the same time be able to perfect themselves in any special branch, according to their tastes or aptitudes. In the preparatory classes are taught the first principles of pastry making and cooking, the rules for preparing food, the elements of domestic economy, hygiene, household accounts, use and care of stoves and utensils, and the rudiments of history, geography, botany, etc., so far as they relate to the culinary art. As no French institution could exist without honorific distinctions, the graduates of this preparatory class will, upon the completion of their studies, receive a certificate of capacity which will enable them to follow a higher course. This upper course comprises a study of cooking, pastry making, preserves, liquors, charcuterie, and, in general, everything relating to the alimentary sciences, animal anatomy, carving, ornamentation of dishes, moulding, the care of the pantry, the wine cellar, table service, and the rest. Pupils having obtained certificates of capacity in the different branches can compete for a grand medal, which the founders of the school hope will serve the winners as a title for obtaining employment, not only as chefs in large public or private establishments, but as professors of the culinary art in schools or colleges. All pupils must be of French nationality, but foreign auditeurs or listeners are admitted to these courses, without, however, having a right to pass examination or receive diplomas. The financial resources of the school consist of subsidies given by the State and the City of Paris, the profits of the yearly culinary exhibitions of the French Cooks' Society, the subscriptions of the active and honorary members of the school, and the tuition fees paid by the pupils. The pupils of the preparatory class pay 20f. a year, and those of the higher class 50f. Where this training school is likely to accomplish excellent results is in its public lectures destined for young ladies, housewives and women cooks, which are given three afternoons a week. The lectures, delivered by competent chefs, are not intended to crowd the brain with notions of high feasting, but to teach the principles of average cooking, so that housewives will be able to prepare plain dishes. Thus far housewives have been obliged to a large extent to depend for information upon badly edited cookery books. These public lectures already are well attended. It is a curious sight to see the interest with which ladies following the practical demonstration of the professor preparing the dishes; they ask questions, take notes, listen attentively, look with all their eyes, inhale the culinary aromas, and, at the end of the lecture, taste the dishes that the professor has made in their presence. The school, as I have stated, has been founded under the auspices of the French Cooks' Society, an organization whose culinary exhibitions are celebrated among gourmets. This association counts among its members most of the recognized chefs, and the majority of these men are not only experts in the refinements of their art, but exceedingly intelligent. Many of them are contributors to *L'Art Culinaire*, the organ of the French cooks, edited by Maurice Dancourt, one of the active promoters of the school; and in this review they publish not only excellent recipes, but discuss learnedly questions pertaining to the table. In their turn all the *maitres queux* will give the benefit of their experience to the pupils of the school. At present the principal workers are our valued contributor, M. Alfred Suzanne, Messrs. Capdeville, Garlin, Driessens, Poulain and Morin, who deliver the day lectures and preside over the evening classes. These men are the founders of the school, for without their active perseverance the scheme would not have been brought to a successful conclusion. M. Suzanne was for many years the chef of the Earl of Wilton, and afterwards spent five years as the head of the Duke of Bedford's kitchen. His long residence in England has made him an authority on all English courses, which he now proposes to teach to his countrymen, together with special French dishes. M. Suzanne has written several works on the culinary art—among others, "One Hundred and Fifty Ways of Cooking Eggs" (the English rights of which are vested in the proprietors of the *Caterer*), and "One Hundred Methods of Preparing Potatoes," which is eighty more than the celebrated Parmentier himself knew. A passing mention is due to M. Louis Berenger, the president of the French Cooks' Society. M. Berenger was for three years the head cook of the Emperor of Russia. Although he now spends more time in improving his racing stud (which includes several Kentucky trotters) than in inventing new dishes, he still takes an interest in his old profession, and particularly in the success of this school, which he has been largely instrumental in forming.

BILE AND BILIOUSNESS.

Of all the organs of the human body, none is more unjustly treated or regarded than the liver. According to popular speech, if a person is out of sorts, it is a bilious headache; if his skin turns yellow or sallow, he is bilious; if he has gastritis or enteritis, his liver is out of order; if he has "that tired feeling," his liver needs touching up. In warm climates this sort of things becomes a shibboleth. It is not the liver that is primarily at fault; it is violating the simple and beautiful laws of nature, when the constitution is slowly undermined and disease inevitably appears. Often, indeed, does it make its appearance in the liver or about the function of that organ. Illustrations of this will suggest themselves to every reader. The society-woman who corsets herself until the liver and neighboring organs are compressed, irritated and inflamed. The habitual diner-out who loads his digestive system day after day and year after year with a frightful excess of rich and heavily-spiced and seasoned food. The convivial gentleman who consumes three or four bottles of fine wines or champagne every twenty-four hours. The weakly book-keeper or poor student who devotes all his time to sedentary occupations and none to exercise, sunlight and fresh air. These are but a few instances. In every case, the man and not his liver is to blame. In every case the good liver, besides doing its work properly and promptly warns and warns again his owner by headache and discoloration of the whites of the eyes or the complexion that he is leading a wrong course and that if he does not desist, disease will call him her own. It is hardly needful to describe the importance of the liver—how it acts in digestion and how it aids in purifying the blood. But it cannot be too often repeated that nothing which goes into the system will affect the liver directly or immediately. What is to be done then when the liver gives warning that something is wrong? Stop and obey the summons! Prompt compliance with nature's suggestions will save unknown pain and suffering and it may be life itself. In all these cases keep the pores and glands open and active by warm baths and hard rubbing with a towel. Turkish and Russian baths and massage are invaluable to those who enjoy those superb accessories of the toilet. Use a light diet with all the fruits and sub-acid vegetables you can. There is natural virtue in the tomato, summer squash, green pea, string bean, green corn, onion, asparagus and mushroom. Take plenty of light exercise and avail yourself of the sunshine and the open air the most you can. Then, above all, strengthen the vital functions and especially the liver with a regular course of Ayer's Sarsaparilla. It acts promptly but gradually. You can see the improvement from day to day, but as it simply aids Nature and follows in her footsteps, it effects no sudden revolution. Ayer's Sarsaparilla is merely a scientific combination of vegetable elements, which dispels humors from the system, increases vitality and stimulates the great internal organs. Taken regularly, the headaches cease, the bad complexion and the discolored eyes disappear, "the tired feeling" vanishes, and the rare enjoyment which attends perfect health comes back to the user.

Subscriptions $1 per year. Now is the time to subscribe.

BUSINESS NOTES.

HORSFORD'S ACID PHOSPHATE

Imparts new energy to the brain, giving the feeling and sense of increased intellectual power. Dr. A. M. Bilby, Mitchell, Dak., says: "I have used it in a number of cases of nervous debility, with very good results."

NEW PROCESS WITH IRON.—Dr. Emmens has perfected a new process for making wrought iron from pig metal without being subject to puddling. It is made by placing a number of thin sheet-iron plates and pig-iron in a vat of a chemical solution. These metals are then connected with a dynamo. The current is passed through the vat and causes the pure iron to be effectually separated from the impurities of the pig-iron and deposited on the sheet-iron plates. An idea of its durability is shown when a horse-shoe nail made from it, placed head down in a vise, can be twisted into an almost perfect screw without breaking. It is claimed that this wrought iron can in a cold state be twisted, without breaking, into any conceivable shape, and is said to be far superior to the finest Swedish metal.

ORIGINAL. No. 27.

Pompton Puffs.

BY MARION HARLAND.

3 cups of flour, 1 tablespoonful of butter, ½ teaspoonful of salt, 2 cups of milk, 4 eggs whites and yolks beaten separately, 1 heaping teaspoonful of Cleveland's baking powder.

Sift flour, baking powder and salt together twice, chop in the butter. Stir the beaten yolks into the milk and add the flour, then the frothed whites. Whip high and light and bake in cups in a quick oven.

Use only Cleveland's baking powder, the proportions are made for that.

Hot biscuit made with Cleveland's baking powder may be enjoyed even by those of weak digestion. Cleveland's is the anti-dyspeptic leavening agent. The leaven comes from cream of tartar and soda, nothing else; no ammonia or alum.



Fine Table Wines

From our Celebrated Orleans Vineyard.

Arpad Haraszthy & Co.

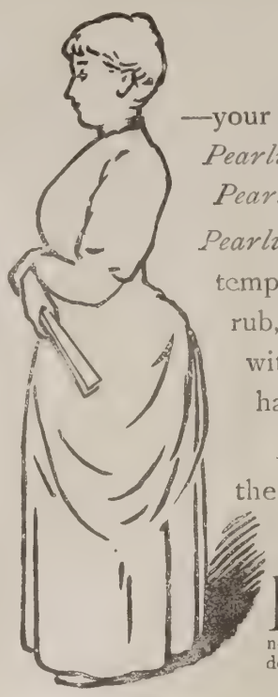
Producers of the

ECLIPSE CHAMPAGNE,

530 Washington St. SAN FRANCISCO.

GENERAL AGENCIES:

NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOSEPH R. PEEBLES' SONS CO., 73 West Fourth Street
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.



Short and sweet

—your hours of labor when you use *Pearline*. Without *Pearline, you may* work hard and do much; with *Pearline you will* work less and do more.

Pearline saves your clothes in the wash, and your temper in the washing. It is the continual rub, rub, rubbing, over a washboard in the old way with soap, that wears your clothes and makes hard work.

Pearline is the new way, and does away with the rubbing. It is as safe as it is sure; be sure to get *Pearline*—nothing else, and you will be safe.

Beware Peddlers and some unscrupulous grocers will tell you "this is as good as" or "the same as Pearline." IT'S FALSE—Pearline is never peddled, and if your grocer sends you something in place of Pearline, do the honest thing—*send it back*. 242 JAMES PYLE, New York.

PULP BOBBINS.—A bobbin made from wood pulp has been invented by a resident of New England. Some of its more important advantages over other bobbins are that it does not split or wear rough, which in present makes causes the yarn to be sometimes caught and broken.

RED COTTON.—Cotton of a red color is being grown in Georgia, where on an acre the cotton plants have stalks, leaves and flowers, every one of which is a deep red color. This crop is the product of a seed taken three years ago from two stalks of red cotton found in a cotton field. Attempts are being made to perpetuate this variety.

ADVERTISING GENIUS.—The writer of advertising matter must first be a business man with natural trade instincts, and have that analytical ability and keen perception which enables him to seize upon the appropriate and strong points of a business and present them to others in a winning and convincing manner.—*Profitable Advertising.*

ARTIFICIAL ALMONDS.—"Dutch Almonds," so called, are said, on the authority of the *British and Colonial Druggist*, to be very deceptive imitations of the genuine, though they are not almonds at all. They have much the appearance and flavor of the much prized nut; but their chief constituents are glucose and essence of mirbane. The inventors and makers of these artificial almonds carry on their business in Holland, and they are finding customers among confectioners in all parts of Europe. It will not be long before they will attack the American market, if, indeed this is not already the case.

DERIVATION OF CAUCUS.—As the rise and fall of the nations of antiquity may be traced by the study of comparative philology, so the history of any art or industry is reflected in that science, and the number of words which are contributed by a given profession may, to a certain extent, be taken as a measure of its importance. Thus the most influential guild of colonial times was the ship calkers of Boston. In those days a meeting of the calkers was usually held to decide upon political or other questions and was called a "calkers," hence our Latin-looking word "caucus."

SURVEY OF THE PACIFIC COAST.—After nineteen years the United States steamer Hassler has completed the survey of the California and Oregon coasts. The Hassler was built specially for this work in 1871, and on her maiden trip around Cape Horn, Professor Agassiz made a series of deep-sea dredgings along the coast of North and South America, with valuable results to science. The most interesting fact developed in the recent surveys is that the coast line of Southern California is more abrupt than that of any part of the Atlantic or other portion of the Pacific.—*Scientific American, July* 25.

ELECTRIC LAMP.—A peculiar kind of electric hand lamp for firemen is a recent English invention. The battery and lamp are contained in a copper case similar to a fireman's ordinary lamp, and fitted with a handle for convenience in carrying. Very powerful parabolic reflectors are provided, and the lamp, which has a duration of from two to three hours—after which it can easily be recharged—is said to form an important adjunct to the outfit of the fire brigade. The lamp is also suitable for use in mines, gas works, gunpowder and chemical factories. The advantages claimed for the device are portability, facility in charging, capability of resting the battery when the light is not required, and entire safety.

THE PIE CROP.—In the United States there are eaten every day 2,250 000 pies. Each week, 16,750,000. Each year, 819,000,000, at a total cost of $164,000,000—an amount greater than the internal revenue, and more than enough to pay the interest on the national debt. If the pies eaten every day were heaped one on top of another, they would make a tower thirty-seven miles high. If laid out in a line, they would reach from New York to Boston. With the yearly pie product of the United States a tower 13,468 miles high could be erected, and stretched in a line they would girdle the earth three times. These pies of a year would weigh 803,000 tons. And, if, as has been so often stated, figures don't lie, then certainly pie is a great institution.—*N. Y. Press.*

25 CTS PISO'S CURE FOR CURES WHERE ALL ELSE FAILS. Best Cough Syrup. Tastes good. Use in time. Sold by druggists. CONSUMPTION 25 CTS

Armour's

Extract of BEEF.

The best and most economical "Stock" for Soups, Etc.

One pound equals forty-five pounds of prime lean Beef.

Send to us for our book of receipts, showing use of ARMOUR'S EXTRACT in Soups and Sauces.

ARMOUR & CO., Chicago.

CONFEDERATE MONEY.

Warranted Genuine and in Good Condition.

We are extensive dealers in Confederate Money—rare relics of our late civil war; also Bullets, Cannon Balls, etc. We want agents in every city North to sell these mementoes, and we will pay agents handsomely to sell our goods. We will furnish the money to those desiring at the following retail prices: Shinplasters, 10, 25, 50 and 75 cents each, or the entire set 50 cents. Complete sets, consisting of $100, $50, $20, $10, $5, $2, $1, 50c., $1 per set. $500 bills, $2 50 each. $100 bills, 15 cents, or two for 25 cents. $50 bills, 10 cents, or two for 15 cents. $5 and $20, 5 cents each. 50c., $1 and $2, 25 cents each. Inquirers enclose stamp for reply.

Publishers of SOUTHERN AGENT, Atlanta, Ga.

LITTLE BOYS AND GIRLS

MAKE EASILY $2 A DAY.

Write for particulars. Address

BARKER PUBLISHING COMPANY, Atlanta, Ga.

$5, $10 and $20

CONFEDERATE BILLS,

only five cents each. AGENTS WANTED.

SOUTHERN STAR, Atlanta, Ga.

25c. THE DAISY STAMPING OUTFIT. 25c.

STAMPING BY AN ENTIRELY NEW PROCESS. No more ironing or cleaning of patterns, no powder to use. Our Outfit has **OVER FIFTY NEW DESIGNS**—Children, Birds, Animals, Flowers, Leaves, Ferns and Mottoes in great variety; Borders in rich styles, and a complete Alphabet, together with a bottle of **STAMPING FLUID,** which makes an instantaneous impression, and is absolutely certain, cleanly and easy to use. Every lady can do her own stamping at home. **GREATEST BARGAIN EVER OFFERED.** No other outfit has this Patent Fluid. Designs **SUPERIOR** to many outfits sold for $1.00. We will sell this wonderful Outfit, for a short time only, at **25c., POSTPAID** to advertise our other goods. Send at once. We fill orders promptly. Address

EUREKA MANUFACTURING CO., Hinsdale, Ills.





We Can Save You——— Fifty Dollars When You Build.

If you are thinking of building a home, here is an opportunity to secure one or several designs of houses which will aid you in deciding just what you want.

PLANS READY TO BUILD FROM

ONLY 25 CTS. EACH

Or Five Sets for One Dollar.

The designs given below to select from are practical and are drawn to a large scale by Geo. O. Garnsey, architect for THE NATIONAL BUILDER. Each one consists of a large, beautifully colored picture of a front elevation, including the floor plans, the details, the specifications, and carefully prepared estimates of cost, and all ready to build from. By a special premium arrangement we are enabled to sell these plans at the above extremely low price. **Specify number of Design.** Send all orders to

THE ANALYST PUBLISHING CO.,

No. 19 PARK PLACE, NEW YORK CITY.

No. 2. **Clover Cottage.** Neat, cosy and modern. Cost, $1,960.
No. 3. **6-Room Elegant Brick Residence.** Suitable for city or country; Handsome Front, Good Basement, etc. Cost, $3,500.
No. 4. **6-Room Modern Residence.** Handsome Front, with broad circular Veranda. Cost, $3,000.
No. 5. **Cheap 5-Room Genteel Cottage:** With Reception Hall, 9x12, and good Basement. Cost, $2,000.
No. 6. **8-Room Residence.** Handsome Front, neat Porch, etc. One of a series of residences much in demand. Cost, $3,000.
No. 10. **Bank and Store Fronts.** Showing different styles of Show Windows, and highly Ornamented Fronts. Two designs. Cost, $1,613 and $1,325.
No. 17. **Double City Flat Building.** Six rooms in each flat; building adapted to narrow lot. Ornamental, Romanesque Front. Cost, $10,000.
No. 19. **Queen Anne Cottage, Eight Rooms.** Good light; exhibiting good effect. Cost, $4,000.
No. 21. **Maplewood Cottage, Three Rooms.** Abundance of piazza. Very neat and convenient. Cost, $1,000.
No. 22. **Hyacinthe Cottage, Three Rooms.** Very odd and pleasing. Cost, $750.
No. 23. **Clovernook Cottage.** New in style. Cost, $750.
No. 25. **Castlake Cottage, 8 Rooms.** Neat Story Frame. Cost, $1,875.
No. 26. **Stone Cottage, Six Room.** This design is handsome. Cost, $2,575.
No. 38. **Cheap City House, Eight Rooms.** Suited for inside lot; nicely laid out. Cost, $2,600.
No. 40. **Charming Suburban Cottage of Five Rooms.** Very roomy and convenient. Cost, $2,500.
No. 42. **Beautiful 6-Room Cottage.** Handsomely designed; all modern improvements. Cost, $3,100.
No. 49. **Neat Village Church.** Seating capacity about 600. Cost, $7 500.
No. 50. **Store and Office Building.** Brick; 2 stores and 8 offices, very handsome. Cost, $7,000.
No. 51. **Modern Suburban Residence of Nine Rooms.** Beautiful design. Cost, $2,100.
No. 57. **Rosedale Cottage, 3 Rooms.** With Bay Window, Frame. Cost, $1,000.

TABASCO PEPPER SAUCE,

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced by connoisseurs to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY'S SON,

NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

THE

New Model "HALL"



A Perfect Typewriter. Best Manifolder. Terms to Agents Liberal. Portable. Inexpensive. Writes All Languages. *Read Mr. Howell's Opinion*

"I wish to express my very great satisfaction with the Hall typewriter. Impressions and alignment are both more perfect than any typewriter that I know, and it is simply a pleasure to use it. It is delightfully simple and manageable."

(Signed) W. D. HOWELLS.

Send for Catalogue and Specimens of work.

Address N. TYPEWRITER CO., 10 Temple Pl., BOSTON.

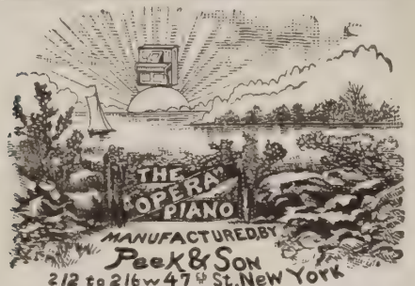
DETECTIVE! WE WANT A MAN IN every **locality** to act as **Private Detective** under our instructions. Send stamp for particulars.

WASHINGTON DETECTIVE AGENCY, Box 787. Washington, Iowa.

HARTSHORN'S SELF-ACTING SHADE ROLLERS

NOTICE SCRIPT NAME OF Stewart Hartshorn ON LABEL, AND GET THE GENUINE

HARTSHORN



A HIGH-GRADE PIANO

AT A VERY MODERATE PRICE.

NEW DESIGNS. FANCY WOODS.

Terms Easy. + Monthly Instalments.

TWO, THREE AND FOUR PEDALS.

Catalogues, Prices, Terms, Etc., sent to any address.

EVERY PIANO WARRANTED 5 YEARS.

(Mention this Paper.)

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,

HOWARD STREET, BOSTON, MASS.

GOLD MEDAL, PARIS 1878.



W. BAKER & Co.'s

Breakfast Cocoa

from which the excess of oil has been removed,

Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

"BILLET"

are

Carefully Selected

French Sardines,

Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS.

BROMO SODA.

Useful in Nervous Headache, Sleeplessness, Excessive Study, Over Brainwork, Nervous Debility, Mania, Etc.

DOSE—A heaping teaspoonful in half a glass of water, to be repeated once after an interval of thirty minutes, if necessary. Each teaspoonful contains 30 grs. BROMIDE SODIUM and 1 gr. CAFFEIN.



SUPPLIED BY ALL DRUGGISTS.

Ask for (Bromo-Soda, Warner & Co.) and take no other "Bromo."

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.

MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.

STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street,

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,
184 Greenwich St., N. Y.

HAMMOND'S
CELEBRATED
Calumet Oleomargarine

Strictly pure, cheap and healthful.
Ask your grocer for it.
Put up in packages of all sizes, also prints and rolls.

G. H. HAMMOND CO.,
607 to 615 THE ROOKERY,
CHICAGO.

Also offices at Boston, South Omaha, Neb., and Hammond, Ind.

BLAIR'S PILLS.



Great English Remedy for GOUT, RHEUMATISM and KIDNEY COMPLAINTS.
SURE, PROMPT and EFFECTIVE.
Large Box, 34; Small, 14 Pills.
At all Druggists, and
224 WILLIAM STREET, NEW YORK.

Pure LAGER BEER,
"IMPERIAL" and "CULMBACHER"
Brewed & Bottled
SPECIALLY FOR
HOTELS, CLUBS
AND
PRIVATE FAMILIES
BY
Beadleston & Woerz
291 W. 10th St. New York.
Orders by Postal Card promptly attended to.

SWIFT'S
CHOICE
Chicago Dressed Beef
AND
MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,
UNION STOCK YARDS,
CHICAGO, ILLS.

PUBLICATIONS OF THE
ANALYST PUBLISHING CO.

THE AMERICAN ANALYST.
Weekly. Every Thursday. $1 per year.

THE ROOFER, TINNER AND SHEET-IRON WORKER.
Monthly. 15 h each month, $1 per year.

THE LEATHER MANUFACTURER.
Monthly. 1st each month. $3 per year.

Reliable agents and representatives wanted everywhere on liberal terms. Address
ANALYST PUBLISHING CO.
19 PARK PLACE, NEW YORK.

ESTABLISHED IN LONDON, 1831.
DEAN'S PATENT
Ardenter Mustard



W. G. DEAN & SON,
361 & 363 WASHINGTON STREET; 84, 86, & 88 NORTH MOORE STREET, N.Y.

We can save you Fifty Dollars when you Build. See



A complete set of Plans to build from, simply state about price of dwelling desired. 25 cts. in stamps. Our book "Beautiful Homes." 25 cts. Our monthly book "The National Builder," 25 cts. Address
The National Builder, Adams Exp. Bldg., Chicago, Ill.

Subscription $1.00 per year. Now is the time to subscribe.

WHAT A DIME WILL DO!

Every BOY and GIRL who loves to read splendid Stories, Sketches and beautiful Poems, should subscribe for the AMERICAN YOUNG FOLKS, a beautiful Illustrated Monthly Magazine, established in 1875. Its stories are the Very Best that can be obtained from the Foremost Writers of Juvenile Literature, and every issue is filled with good things. The regular subscription price is $1.00 a year, but if you will **Cut this out** and return it to us with **a Silver Dime** and your name and address, we will send you the Magazine Six Months on Trial. Address,

AMERICAN YOUNG FOLKS, Manchester, N. H.

THE ORIGINAL AND GENUINE
(WORCESTERSHIRE SAUCE).
LEA & PERRINS' SAUCE



In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—

Lea & Perrins

Beware of Imitations; see that you get Lea & Perrins'

For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.
JOHN DUNCAN'S SONS, NEW YORK.

DO YOU KNOW THE **DANGER** OF USING SOAP?

IF YOU ARE GOING TO THE COUNTRY, DO NOT FAIL TO READ THE FOLLOWING.

We do not mean soap made from proper material; and when we tell you that about ninety-nine per cent. of Toilet Soap is made from refuse fats gathered from tenement houses, hospitals, butcher shops, and from cattle dying of disease or during transportation, you will, we believe stop and think. Putrefactive changes have taken place in most of this material, as it is mixed with lean meat, blood, bones, sinews, etc. There is at least *one* soap that is made wholly from vegetable material—OLIVE and PALM OILS—and that is

VELVET SKIN SOAP.

It will keep the skin soft and in a healthy condition, as no animal fats are used in its manufacture.

Nothing in one's personal outfit is quite so satisfactory as a thoroughly reliable Toilet Soap.

We are confident that a trial of this article will insure its continued use. If the dealer does not keep it, do not take any other, but require him to order it for you, which he can do readily. **Otherwise, send to us direct.**

MANUFACTURED BY

REED & CARNRICK, Manufacturing Chemists,

447 GREENWICH STREET, NEW YORK.

GLENN'S **SULPHUR SOAP.**

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,

C. N. CRITTENTON,

115 FULTON STREET,

NEW YORK.

THE QUEEN'S PRIZE SCHOOL OF HISTORY.

About two years ago the publishers of THE CANADIAN QUEEN added what has proven to be a very popular and successful feature to their publication in establishing their Prize History School. It has offered competitive examinations in English, Canadian and American History, giving valuable rewards to those making the most correct answers. During this time there have been added the names of over forty thousand new subscribers to their books Rewards have been made by THE QUEEN which have cost them in cash over ten thousand dollars. THE QUEEN'S Prize School of History has received the sanction and support of the clergy, press, and, in fact, of the best people of the Dominion of Canada. The following, taken from a leading daily newspaper, expresses an opinion which is universal:

A HANDSOME PRIZE.

AN EVIDENCE OF WHAT A GENUINE MAGAZINE COMPETITION OFFERS.

"On Friday there arrived from Toronto, for Miss M. Hora, a handsome Shetland pony, harness and cart, being the first award in the Royal Quilt Competition of THE CANADIAN QUEEN magazine. It attests the genuine nature of the magazine's contests by its excellent condition and value. THE QUEEN has frequent competitions and has made innumerable awards, displaying a generosity quite surprising to those who have had experience of the limited field for Canadian journalistic enterprise. But THE QUEEN has been a success as a business venture from the start, and is growing in literary excellence steadily. It covers the field of fashion, as well as light reading; talks to the household, the young, and, indeed, all home classes. The competitions have been used to assist the introduction of the magazine, for where it is introduced it is quite certain to remain a monthly guest. The leading prizes have been made, as instance this latest to Kingston, while many smaller prizes have rewarded the moderately successful among competitors. THE CANADIAN QUEEN is truly royal in its ways."—*The (Kingston, Ont.) Daily British Whig*, June 27th, 1891.

QUESTIONS IN AMERICAN HISTORY.

1.—Give the names of the early navigators who it is claimed by historians first discovered America.
2.—From whom has America taken its name?
3.—What class and nationality first settled Virginia? New York? Massachusetts? Pennsylvania? Maryland?
4.—What action did the Continental Congress of 1774 take and what was the result of that action?
5.—What was the first battle fought in the War of the Revolution?
6.—What nation rendered the Americans great assistance in the War of the Revolution?
7.—Give the names of the committee appointed to draft the famous Declaration of Independence.
8.—What was the date of the signing of the United States Constitution?
9.—After becoming a nation and before the great Civil War, what were the principal conflicts which engaged the Americans?
10.—What was the direct cause of the Civil War? What Generals of the Northern Army have occupied executive positions under the Federal Government since the closing of the War? Who was Commander-in-Chief and who were the principal Generals of the Confederate Army during the struggle?
11.—How long did this War last and what is the computed loss of life?
12.—What can be said to day of the United States as a nation?

To the *First* gentleman sending the correct answers to the above questions in American History the publishers of THE QUEEN will present "**Majestic**" acknowledged the **Handsomest and Finest Riding Horse in Ontario.** ("Majestic" is sixteen hands high, thoroughbred, seven years old, and valued at $350.00.) To the *First* lady the publishers of THE QUEEN will present an elegant **Jacket of Genuine Alaska Seal** to be made according to the measurement supplied by the winner. To the *First* boy under sixteen years of age the publishers of THE QUEEN will present a **Little Giant Safety Bicycle** valued at $75.00. To the *First* girl under sixteen years of age the publishers of THE QUEEN will present an elegant **Music Box,** playing twenty tunes, finely finished and valued at $55.00.

To the gentleman from whom the *Last* correct answers are received before the close of this Competition, the publishers of THE QUEEN will present a **First Cabin Passage to Europe and Return** and **$200 in Gold** for expenses. This trip can be taken by the winner any time before October 1st, 1892. To the lady from whom the *Last* correct answers are received before the close of this Competition the publishers of THE QUEEN will present a **Pony, Cart and Harness.** To the boy under sixteen years of age from whom the *Last* correct answers are received before the close of this Competition the publishers of THE QUEEN will present a **Solid Gold Watch** containing one of the best American movements, and valued at $75.00. To the girl under sixteen years of age from whom the *Last* correct answers are received before the close of this Competition the publishers of THE QUEEN will present an elegant **Solid Gold Watch,** containing one of the best American movements, and valued at $65.00.

ADDITIONAL PRIZES IN ORDER OF MERIT: Silver Tea Services, Ladies' Gold Watches, Silk Dress Patterns, French Mantel Clocks, Portiere Curtains, Toilet Cases, Manicure Sets, and many other useful and valuable articles.

The object of the publishers in offering these liberal prizes is to introduce THE QUEEN Magazine into **new** homes. Answers must be mailed *on or before* November 10th, 1891, and must be accompanied by $1.00 for one year's subscription to THE CANADIAN QUEEN. Prizes awarded to subscribers residing in the United States will be shipped to them **free of duty.** The distribution of awards is in the hands of disinterested persons, and decisions will be based on the correctness of answers. Use your own language in wording the answers. No corrections can be made after your answers are mailed. THE QUEEN is a large, forty-eight page family magazine, especially interesting to ladies and children, and visits regularly **over one hundred thousand of the best homes** in Canada and the United States. The awards in THE QUEEN'S PRIZE SCHOOL OF HISTORY are made strictly with regard to merit, without partiality to persons or locality. The decisions must be accepted as final. If you have never seen a copy of THE QUEEN send six U. S. two cent stamps and receive a late number, post paid, containing letters from those who have received rewards in previous contests.

Address THE CANADIAN QUEEN, PRIZE SCHOOL OF HISTORY, 58 BAY STREET, TORONTO, CANADA.

To Subscribers, Readers and Advertisers.

SUBSCRIBERS' attention is called to the great variety of interesting and instructive subjects treated in this number. We respectfully ask the co-operation of our subscribers in extending our Subscription list, which will enable us still further to increase the value of the AMERICAN ANALYST to them.

The CASUAL READER is specially requested to examine our liberal premium offer.

ADVERTISERS who do not know of this Journal already, are respectfully referred to article headed "A Business Benefit."

ALL are kindly requested to peruse this number thoroughly.

The AMERICAN ANALYST can be had at any news stand in the United States. Any newsdealer will take orders for it, the American News Company being our wholesale agents. All postmasters will receive subscriptions.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 38. NEW YORK, THURSDAY, SEPTEMBER 17, 1891. WHOLE No. 238

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - $1 per year.
Single Copies, - - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.
Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.
Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,
H. LASSING, M. D., T. P. McELRATH, *Editors.*
No. 19 Park Place, . . . New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York

CONTENTS.

Bright Stories—The Snowstorm 448
Domestic Dietetics 449
Editorials 445
Value of Food Analysis; The Earth a Dynamo; To Prevent Frost.
Insomnia 450
Oriental Cookery 449
Phosphorescence 450
Storm Classification 451
Talking of the Future 447
The Sun a Magnet 446

VALUE OF FOOD ANALYSIS.

An editorial article in the *Journal of the American Medical Association* makes short work of the prevalent fashion of proving a food to be valuable because a chemical analysis has shown it to contain some of the valuable elements of a food. One of the first of the artificial foods for infants was that of Liebig. It was made by a master hand, so far at least as its chemistry was concerned. It contained the exact amounts of albumen, sugar, fat and salts necessary for the nutrition of the child; but an extensive use proved that it failed in its object. The lesson which it teaches is only slowly gaining ground. That lesson is that the animal organism requires something more for its maintenance than so much albumen, so much fat, and sugar, and mineral matter. It requires that these substances shall be of such kind, and in such form, that they can be both digested and assimilated. The examination of the food of the properly nourished individual shows that he requires, for instance, a given amount of proteid. Certain foods contain the proper amount of proteids. It is thereupon assumed that these foods will answer the requirements of nutrition, which does not always happen. This is not the first nor the only time that physicians have been misled by a name. It is a little difficult to realize that a name is only a convenient tag, and does not always reveal completely the contents of the bundle to which it is attached. What is a proteid? Something which has certain definite chemical reactions. Certain differences in reaction enable chemists to separate in a crude but convenient way the proteids into several classes. But the separation of the proteids into classes, and indeed the very recognition of the proteids themselves, is by no means wholly artificial, and the several tests for these purposes give no idea whatever of the structure of these substances. The various proteids certainly are available as food-stuffs, but under what conditions each is most effective as a nutrient is not known. Moreover, this question is a biological one, and, at present, at least, far beyond the ability of chemistry to answer. It should therefore be clearly realized that the term proteid is a purely chemical one, and gives name to a group of substances which answer the requirements of indirect, almost artificial, chemical tests, and that the taking of the word in the broader biological sense, and making practical application as such, is liable to terminate in disappointment, as in the Liebig instance. Physiologists have shown conclusively that common salt is the only mineral substance, iron possibly excepted, which has a direct food value. All other so-called mineral elements are available for food only when they form constituent parts of the complex molecules of the various organic food-stuffs. For instance, it has been attempted to supply the deficiency of lime in the bones in rickets by the administration of calcium phosphate, but without success. The animal organism is unable to build calcium phosphate into the bone tissue. It must receive its calcium and its phosphorus in some other combination. This combination, to be assimilable, must be an organic one, such as is found in the yolk of the egg, to give a single example. To destroy a cereal by heat, to obtain from the ash the phosphate produced, is an illogical procedure. Identically the same products can be formed in the laboratory at much cheaper rates. The condition which made this ash available as a food was its existence in organic combination in the grain, and this availability was destroyed with the destruction of the grain. A well-known member of the association once remarked that the chemical test of a beef extract, showing how much albumen it contained, was practically useless to the physician—that the only sure test of the value of a food was the clinical observation of its assimilability. It is not intended to deny that chemical analysis is of value in assisting in the selection of foods, but one must be guided in making these analyses by a clear and full idea of their scope and their limitations. Ultimate analyses of foods are of very little use in determining the nutritive value of these substances, and are often very misleading.

THE EARTH A DYNAMO.

Our readers will derive great satisfaction in the perusal of an article published elsewhere in this issue in reference to the magnetic influence of the sun. The paper as we present it is condensed from a communication in the *N. Y. Tribune* from "an occasional" Washington correspondent, and everybody, we think, will agree with that journal that it must be a dull mind which is not fascinated by Professor Bigelow's discovery that the earth is a cosmical dynamo, generating electricity within itself by revolving in front of a magnet more than ninety millions of miles away. What makes such strong appeals to human imagination as the enormous dimensions of heavenly bodies, the terrible velocities with which the planets and our whole solar system whirl through space, or the infinities of time and distance? And yet are these things any more wonderful than the minutiæ of structure which the microscope reveals? How amazing it is that a few hair-lines on the little rainbow obtained in a spectroscope should tell us unerringly the composition of stars almost incalculably far away! And to think that a bit of steel, hung on a pivot and provided with a tiny mirror to register its tremors, should be able to tell us about convulsions on the solar surface to which the Martinique cyclone is as the maiden's sigh to that grim hurricane! To the telescope, camera, spectroscope, polariscope and barometer, in analyzing those solar activities on which human welfare so largely depends, is now added, as never before, the magnetic needle. And this instrument, unlike its fellow-inquisitors, works continuously, hour after hour, day and night, rain or shine, besides making a permanent record of its own unobserved indications. The special value of Professor Bigelow's recent discoveries lies, not in the freshness of his main idea, but in his magnificent demonstration of its correctness. Lagrange, of the Brussels Observatory, and others have conceived that the sun might be a magnet, which induced magnetism in the earth; but no one until now has made that theory a safe foundation of further logical processes. A fresh mode of attacking several tempting but baffling problems is now offered; such as the precise period of the sun's rotation, the nature of the coronal envelope about the orb of day, the connection between this latter phenomenon and the varying frequency of sun-spots and the shifting positions of the spot-zones, and in turn, the apparent relation between all three of these, the aurora borealis and the curious variations of the compass. In proving that sunlight is really magnetic, and that it exerts its influence upon the earth in rays parallel to those of heat and light, Professor Bigelow has accomplished a unique and important work. His discoveries become the more credible, on the one hand, by reason of the recent revelations, by Maxwell and Hertz, of the intimate relations existing between electricity and light, and, on the other, strengthen the conclusion to which those investigators are leading scientists, that light is

hereafter to be studied as a magnetic phenomenon. It is also a commendation of his work that he connects and unifies, as no one else has been able to do, an immense variety of apparently inconsistent facts, and at a time when popular pride in all that is American is peculiarly keen.

TO PREVENT FROST.

Artificial frost prevention is now suggested as an outgrowth of Senator Farwell's scheme for artificial rain production. A gentleman of Chicago has written a letter to Secretary Rusk on the subject. His theory is that clouds of artificial mists prevent the radiation of the heat from the earth. He suggests that the machinery and materials used by Col. Dyrenfurth in causing rain be tested as a means for bringing the clouds closer to the earth and of creating a sort of fog, which will be a preventive against the ravages of frost. At this rate it will not be long before man will expect to adjust the atmosphere and the weather in any manner that suits him.

THE SUN A MAGNET.

SOME INTERESTING DISCOVERIES OF A WASHINGTON ASTRONOMER.

A stir has been created recently in scientific circles, by an announcement of Professor Frank H. Bigelow. For over a year he has been laboring to demonstrate, what has been suspected, but never before has been proven, that the sun is either a magnet or very much like one, in its influence on other heavenly bodies, and that the strange phenomena of terrestrial magnetism spring from that source. This work, which was original in method, and exceedingly intricate and difficult, has at last reached a stage which experts accept as success. This important discovery promises to unlock several hitherto impenetrable mysteries of the universe, to open new fields of research, and to win lasting and high renown both for this young scientist and his country. Professor Bigelow started out, more than two years ago, by attempting to explain the solar corona as of magnetic origin. This beautiful and marvellous spectacle is only to be seen when the sun itself is completely obscured by the moon in total eclipse. It stretches out from the edge of the disc like an irregular halo, in some places and at certain times extending a distance nearly equal to a solar diameter, the outline somewhat suggesting several wings, and altogether being roughly star-shaped. But it fluctuates in figure and extent greatly. A very generally held opinion as to its nature has been that it is gaseous, the spectroscope revealing therein hydrogen and various vaporized metals, besides some substances whose composition is not known. But as meteorites fall through it without much, if any, perceptible resistance, obviously the outer envelop of the sun is of a very delicate texture. Another feature of the corona is that it seems to radiate in fine streaks which are not entirely straight, but slightly curved. It is this curvature that is the foundation of Professor Bigelow's discovery. He conceived that the coronal streamers or rays might correspond to what Faraday called "the lines of force" in a spherical magnet, and set out to see if this were true. Every schoolboy and schoolgirl who has studied natural philosophy recalls the pictures of iron filings on a sheet of paper, grouped like feathery fringes about the ends of a horseshoe magnet placed below. These filaments tend to organize into radiant lines, leaving one pole of the magnet and entering the other. The precise direction and shape of these lines in a spherical magnet have been carefully studied and described by such eminent physicists as Maxwell, Mascart, Thomson and Tait, and whether the coronal lines corresponded to these, was to be ascertained by an elaborate mathematical method known as "analysis by spherical harmonics." The first test was made with a photograph of the corona taken on January 1, 1889, by the Harvard eclipse party. The harmony between the curve of the lines there exhibited, and that which theory prescribes was so close as to give substantial confirmation of Professor Bigelow's suspicion. This led to a paper on the subject, published by the Smithsonian Institution in October, 1889, and recommended for publication by Professors Cleveland Abbe and Asaph Hall. Professor Bigelow was associated with the astronomical work of the United States Scientific Expedition to West Africa in 1889–'90, but failed to get at Loando a photograph of the December (1889) eclipse; but upon his return to Washington a year ago last spring he secured pictures which others had taken of this and other coronas, and laboriously examined them to see if they too bore out his theory; which they did. His discussion of a photograph taken by Professor Asaph Hall at La Junta, Col., July 29, 1878, was published by *The American Journal of Science*, in November, 1890. In still another article on "The Solar Corona," in that same magazine for last July, he deals with a third coronal photograph, obtained on December 22, 1889, at Cayenne, South America, by Professor Schaeberle; and in this connection he gives illustrations of his models of the three globes with bent wires inserted to represent the coronal streamers. These rays are grouped about either pole in a zone about 10 degrees wide, the centre of the belt being about 34 degrees from the pole; and all in one hemisphere, curving so that if continued far enough they would enter the other hemisphere in the corresponding zone. The matter composing the coronal streamers is believed to be shot up from the sun by some expelling force, but it ceases to be incandescent and visible at a short distance. It is part of Professor Bigelow's theory that sun spots are caused, in part, if not wholly, by the falling of this matter perpendicularly to the sun's surface; and as it ascends from high latitudes in rocket-like curves which bend over toward the equator, this deposit would of course fall nearer to the equator the more powerful the original ejection. Therefore he connects, as cause and effect, the weaker coronal development observed at the minimum stage of the eleven-year cycle with the higher latitude in which spots are then found, and the greater coronal extension at the maximum period with the greater proximity of the spots to the equator. Some of the coronal matter, the lighter part, of course, may not be deposited on the sun, he thinks, but, being carried along the lines of force to the plane of the equator, it may become distributed out in space in that plane so as to cause that other mysterious appearance, "the zodiacal light." One use which Professor Bigelow has made of this discovery is to ascertain, in a way never before possible, how long certain parts of the sun were in making a complete revolution. A study of spots has shown that the regions near the equator revolve faster than those near the poles. But spots are seldom or never seen in either hemisphere in higher latitude than 45 degrees. Fortunately the centres about which the coronal belts are arranged, and which Professor Bigelow, for convenience, calls the sun's "coronal poles," are not identical with the geographical poles, but are about 4½ degress to one side. Hence they will be in different positions, as regards the axis of rotation, at different times. Having located them, then, in each of his three photographs, taken in different years, he is enabled to compute precisely the time required for a single revolution, which he finds to be 27 days, 9 hours, 52 minutes, 52 seconds. He can now easily locate the position of those poles at any future hour or minute. Professor Bigelow is very careful to avoid calling the sun a "magnet." He merely proves that it is a "polarized body," acting like one. He takes pains to say that the influence exhibited in the corona, whether it really be magnetism or some other cosmical force (or form of force), related to it much as light is to heat, it is simply subject to the same mathematical laws as magnetism. The same principle by which Newton explained the fall of the apple to the earth also shows why the planets stay in their regular orbits about the sun, instead of flying off into space. But attraction formed only part of that great philosopher's system. Repulsion is also included in it. And many of the mathematical formulæ applicable in discussing phenomena of the former class are also suited to the latter, with merely a change of algebraic signs from plus to minus. Great mathematical problems relating to electricity and magnetism are solved by this method or "function;" and Professor Bigelow merely claims that the polarization of the sun, and the solar control of terrestrial magnetism are instances of "the Newtonian Potential Function in the case of Repulsion." The problem of the aurora borealis is the next one which Professor Bigelow undertook. The intimate relation it bears to terrestrial magnetism is clearly shown by the agitation of the magnetic needles at times of great auroral displays, while in turn its relation to solar activity is proven by the greater abundance of "northern lights" at the maximum stage of sun spots in the eleven-year cycle. Yet the "how" and "why" of this lovely phenomenon are yet mysteries. In that the aurora occurs only in a comparatively narrow belt about the magnetic pole of the earth, it closely resembles the arrangement of a corona about the sun's poles. If, now, those vast, flickering, brilliant streamers which form such a conspicuous feature of our auroral displays could be shown to conform to the "lines of magnetic force" emerging from the earth, we should have a more complete demonstration of their nature and of the harmony between solar and terrestrial phenomena. We might also find, then, upon further examination, that not only did the sun act upon the earth through the medium of interstellar ether, by magnetic induction, but that the earth reacts upon the moon in a similar manner, that is, magnetically. But, as Professor Bigelow showed in the *American Journal of Science* for last February, and also in a recent talk before the astronomical section of the American Association for the Advancement of Science, the observations of aurora thus far have not been precise enough for him to make that comparison. He points out how measurements should be taken in order to be available, and appeals to observers to act on the hints he affords. Meantime he has built up the mathematical formulæ wherewith to handle the data when he gets it, and has designed an instrument, which has been made for him by the United States Coast and Geodetic Survey, to facilitate his test. But it is Professor Bigelow's recent discovery regarding terrestrial magnetism which is of the greatest immediate practical importance, to say nothing of its far-reaching results. It comes just at the moment when the scientific world was on the verge of abandoning an elaborate, concerted movement for solving a great mystery. "True as the needle to the pole," like many other similes, is an imperfect comparison. That little strip of steel, by which every navigator in the civilized globe steers his craft, and by which every acre of land in the world is surveyed before its bounds are designated for record, does not, except in rare instances, point due north, nor is it stationary. Its direction is toward a certain centre called a magnetic pole some distance from the geographical pole; and but for carefully drawn charts, making proper connections for the greater or less variation in every part of the globe, our ships would be wrecked and our boundaries would be wrong, through the false guidance of the compass. There is, moreover, a small daily oscillation. After remaining steady all night, the needle will at daybreak, in our hemisphere, begin to swing very slowly eastward until eight or nine or ten o'clock, and then move westward past the starting point until noon or 2 P. M., after which it returns, reaching its ordinary position by or before sunset. This oscillation is very small—practically nothing at the equator, about five to eight minutes of an arc at Washington and Philadelphia, rather more in Toronto, still

greater in Labrador, and up on Lady Franklin Bay, in north latitude 81.44, as much as two full degrees on some days. This oscillation—which, by the way, is quite distinct from the more sudden, violent and irregular perturbations called "magnetic storms"—is greater in summer than in winter, greater at the equinoxes than at the solstices, and from 50 to 75 per cent. greater at the maximum than at the minimum stage of sun-spot frequency in the eleven-year cycle. In the southern hemisphere the swing is in the reverse direction; and there are a few stations where there is a double instead of only a single complete daily fluctuation. To the discovery of these facts the world owes much to Sir Edward Sabine, who secured the establishment of magnetic observatories, under British auspices, at home and in the colonies; although not a little credit is due to Dr. A. D. Bache, of the United States Coast Survey, and to the scientists of other lands. In order further to investigate this matter, and largely with a hope of finding some uuderlying law that would explain the phenomena already mentioned, a series of co-operative observations were taken in 1882–83, under the auspices of several Governments, at thirteen circumpolar stations, eleven in the northern hemisphere and two in the southern. The data had all been printed and discussed without result, and until a few days ago it was expected that when the International Polar Conference met in Munich this month it would dissolve its organization and cease its efforts. But Gen. A. W. Greely, the American delegate, takes with him the announcement of Professor Bigelow's discovery, and will urge continued observation with special reference to the soundness of the theories involved, and extending their application. Professor Bigelow's explanation is accepted as correct by so learned a man as Professor Cleveland Abbe, who last year presided over the section of physics in the American Association for the Advancement of Science; by Dr. C. A. Schott, for forty years in charge of the magnetic work of the United States Coast and Geodetic Survey; by Professor Mark W. Harrington, the new chief of the Government Weather Bureau at Washington, himself an expert astronomer and mathematician, and by General Greely. It was received with much favor, after a short verbal exposition, by the astronomers at the recent meeting of the American Association for the Advancement of Science, and without doubt it will profoundly impress the European savants to whose notice it is about to be brought. Terrestrial magnetism results, Professor Bigelow believes, from solar energy transmitted to the earth along two sets of lines; one the coronal, curved, and crossing the plane of the ecliptic near us perpendicularly; the other, straight, like the rays of light and heat, and parallel with the ecliptic. The latter set he holds to be the most important, at least as regards the daily oscillation of the needle. What takes place every day, then, as the earth rotates in these rays is practically what takes place in a dynamo for producing electricity. It is only necessary to move any conducting substance past a magnet, across its "line of force," to have that conductor made a magnet itself for the time being by "induction," and for a system of electrical currents circulating around its axis to be excited. While the conductor approaches, its nearest end acquires, let us say, north-pole magnetism, and the surrounding currents go in one direction, counter-clock-wise; but when the moving conductor has passed the stationary magnet, this same nearest end, now receding, reverses its polarity, and is like a south pole. In a dynamo there are scores, not to say hundreds, of such conductors arranged on a circular, rotating frame, which are thus brought in succession toward and away from the dominating magnets. Professor Bigelow conceives of each spot on the earth's surface as being rotated daily past the sun, and going through this same experience. From dawn to noon it approaches; from noon to sunset it recedes. The various instruments in an observatory registering the various components of the magnetic situation induced immediately underneath them first swing in one direction and then in the other, and when they are carried out of sight of the sun at night come to a state of rest; provided, of course, that no exterior disturbance arises. Were the earth stationary, this radiant influence would be felt instantaneously, but owing to its rotation there is a lag of about twenty-three degrees of longitude, or about an hour and a half of time. Along these radiating lines light and heat pass outward from the sun; the magnetic force is shown to be directed inward. To prove, or rather to build up this law, Professor Bigelow adopted the following method: Thirteen stations well distributed about the globe, especially in the northern hemisphere, were carefully selected. Their magnetic reports for June, 1883, were examined. This was one of the months of the international polar observation, and the sun now shone constantly in the arctic regions. For each of the twenty-four hours, at each station, the mean of magnetic disturbance, in extent and direction, was computed. And then, with due regard for longitude, a distribution of figures was made which would show the exact magnetic situation at all points at a certain given instant. Of course, the instruments at each station were at a different stage of their diurnal swing from every other. This process was gone through with for twenty-four different hourly positions. This involved exceedingly intricate computations; which only advanced mathematicians can follow. But the result was a beautifully organized system of lines of force, corresponding to those which Maxwell and Thomson have already prescribed and illustrated, as to be found when a polarized sphere is inserted in a "field of force." Work in the immediate future, Professor Bigelow thinks, should be pushed in these directions: From the agreement between theory and observations certain "constants" should be ascertained. The strength of the solar magnetic field, the permeability of the earth, and the atmospheric resistance to magnetism. He would have the relations between magnetism and weather examined afresh from this new vantage ground; improved magnetic charts supplied to navigators; and observatories established, not as now, very much at random, but in picked localities, to render the record more perfect. He also believes that inequalities in the motion of the perihelion of Mercury and the moon's node—the one inadequately explained on the theory of an intra-Mercurial planet, and the other not accounted for by gravitation—can be cleared up by a proper use of his recent discovery.

TALKING OF THE FUTURE.

SOME SUGGESTIONS OF THE PHONOGRAPH'S POTENTIALITIES.

We repeatedly hear querulous inquiries as to what possible practical use the phonograph can ever be applied to—as though the gift of speech did not alone carry with it every imaginable possibility. But the astounding suggestiveness of the wonderful instrument is more directly hinted at in the subjoined communication of "The Prophet" to the *Electrical Review* than has been done by any other authority that has come to our notice. And it is evident that these suggestions are only a few that have first presented themselves to that brilliant writer's fertile imagination:

"In many ways has electricity affected language, and in many other ways will it continue to do so. The ten word restriction of the telegraph, and the five minute limit of the long distance telephone have imparted a telegraphic brevity to our style which is not altogether to be deplored, especially as it quickens the revolt against the long-winded two-volume novel in favor of the short story, which is constructed with some reference to the amount of time at our disposal during this life here upon earth. In speaking of the short story, no less an authority than Edgar Allan Poe says that it is that class of composition which should best fulfil the demands of high genius. The future of letters and style will be greatly influenced by the phonograph. In fact, by it have those very words themselves been restored to the original meanings which they had in the time of Pliny. How appropriate it is to call the wax record of the phonograph a letter, for that word is from the Latin *linere*, *litum*, to besmear or rub over as with wax; and one of the first means of writing adopted by primitive man was by graving upon wax-covered tablets with a stylus (hence our word style), which was a sharp pointed instrument, made originally of metal, but after a Roman school-master was killed by one in the hands of a pupil, horn was substituted. Although destined to play a most important part as an educational adjunct, the phonograph as yet has no place in the school-room; but if introduced in its present form it would make the death of the Roman school-master seem euthanasia compared with the fate of the modern pedagogue at the hands of the small boy. The general exchange of phonographic letters throughout the different parts of our country, which is sure to come in time, will have a bracing effect upon the art of elocution, which seems to have been forced into a secondary position by the great magazine and daily newspaper of the present age. One of the developments which may be confidently expected is the phonographic dictionary, which shall be so constructed that the busy correspondent, by simply touching a button, may have any word properly spelled, pronounced and defined, with the usual etymological data appended, all given in the most approved tones of the elocutionist's art. Indeed, a phonograph in the elevated trains, announcing the stations in the clear, penetrating voice of Senator Ingalls, would be a pleasant relief from the fad for the Slavic languages in which the guards have indulged for so long a period. The horological phonograph, which will announce the various hours of the day, with a few remarks appropriate to the time, has not yet made its appearance among us, but will come with the perfected machine. When it does come, it will no longer be necessary to get up in the cold at night to strike a light in order to find out the time, for, by remaining in bed and simply touching a button, the hour, minute, and even second will be announced to you with all the politeness of a trained servant. In the art of music the phonograph will work its greatest change. Let the makers of music and musical instruments study this instrument and study it well. Its greatest wonder is yet to be told."

POWERFUL PRESSES.—The first large forging press that ever was made is now in full work at the armor plate manufactory (in Sheffield) of John Brown & Co. It is described as of 4,000 tons, and is worked by 2,000 horse-power pumping engines, and commanded by powerful travelling cranes capable of lifting 150 tons. At the works of Krupp, also those of Schneider & Co. in France, similar processes are now at work, and one has been erected at the Terni works in Italy, where the forging of guns and armor plates is largely carried on. A 4,000-ton press has also been made for a Chatillon company.

STEAM AND GAS.—A new method of working motor engines with hot gases and steam is now creating no little interest in English circles. According to this plan the mixture of the steam with the hot gases, to form a charge for doing duty in the working cylinder of the engine, is effected in the following way: First, the chamber having supplied a charge of mixture to the working cylinder, and been afterwards open to an exhaust, hot gases are passed through to clean and dry it, and while the chamber is still full of hot dry gases it is closed. Steam at a suitable pressure is now admitted, mixing there with the hot gases, and forming the working mixture for use in the cylinder. This mixture, being at a high pressure, expands in the cylinder, which, after the former has done duty in effecting a stroke of the piston, is opened to the exhaust, and the spent mixture allowed to escape. For a single-acting engine one mixing chamber is said to suffice, while a double-acting engine requires at least two, in each of which the process takes place; but the chamber or chambers to supply actuating fluid to one end of the cylinder, or of each cylinder, must be separate from those that supply the other end, in order to allow ample time for the process of cleaning out, drying, and filling with hot gases, admitting steam, etc.

BRIGHT STORIES.

THE SNOWSTORM.

From the Russian of Alexander Pushkin.

Toward the end of 1811, at a memorable period for Russians, lived on his own domain of Nenaradova the the kind hearted Gavril R. He was celebrated in the whole district for his hospitality and his genial character. Neighbors constantly visited him to have something to eat and drink and to play at five copeck boston with his wife, Praskovia. Some, too, went to have a look at their daughter, Maria, a tall, pale girl of seventeen. She was an heiress, and they desired her either for themselves or for their sons.

Maria had been brought up on French novels, and consequently was in love. The object of her affection was a poor ensign in the army, who was now at home in his small village on leave of absence. As a matter of course, the young man reciprocated Maria's passion. But the parents of his beloved, noticing their mutual attachment, forbade their daughter even to think of him, while they received him worse than an ex-assize judge.

Our lovers corresponded, and met alone daily in the pine wood or by the old roadway chapel. There they vowed everlasting love, inveighed against fate, and exchanged various suggestions. Writing and talking in this way, they quite naturally reached the following conclusion :

If we cannot exist apart from each other, and if the tyranny of hard hearted parents throws obstacles in the way of our happiness, then can we not manage without them ?

Of course this happy idea originated in the mind of the young man, but it pleased immensely the romantic imagination of Maria.

Winter set in and put a stop to their meetings, but their correspondence became all the more active. Vladimir begged Maria in every letter to give herself to him that they might get married secretly, hide for a while and then throw themselves at the feet of their parents, who would, of course, in the end be touched by their heroic constancy and say to them, "Children, come to our arms !"

Maria hesitated a long while, and out of many different plans proposed that of flight was for a time rejected. At last, however, she consented. On the appointed day she was to decline supper and retire to her room under plea of headache. She and her maid, who was in the secret, were then to go out in the garden by the back stairs, and beyond the garden they would find a sledge ready for them, would get into it and drive a distance of five miles from Nenaradova to the village of Jadrino straight to the church, where Vladimir would be waiting for them.

On the eve of the decisive day Maria did not sleep all night ; she was packing and tying up linen and dresses. She wrote, moreover, a long letter to a friend of hers, a sentimental young lady, and another to her parents. Of the latter she took leave in the most touching terms. She excused the step she was taking by reason of the unconquerable power of love, and wound up by declaring that she should consider it the happiest moment of her life when she was allowed to throw herself at the feet of her dearest parents. Sealing both letters with a Toula seal, on which were engraved two flaming hearts with an appropriate inscription, she at last threw herself upon her bed before daybreak, dozed off, though even then she was awakened from one moment to another by terrible thoughts. First it seemed to her that at the moment of entering the sledge in order to go and get married, her father stopped her, and with cruel rapidity dragged her over the snow, and threw her into a dark, bottomless cellar —down which she fell headlong with an indescribable sinking of the heart. Then she saw Vladimir lying on the grass, pale and bleeding ; with his dying breath he implored her to make haste and marry him. Other hideous and senseless visions floated before her one after another. Finally she rose paler than usual, and with a real headache.

Both her father and her mother remarked her indisposition. Their tender anxiety and constant inquiries, "What is the matter with you, Masha—are you ill?" cut her to the heart. She tried to pacify them and appear cheerful, but she could not. Evening set in. The idea that she was passing the day for the last time in the midst of her family oppressed her. In her secret heart she took leave of everybody, of everything which surrounded her.

Supper was served ; her heart beat violently. In a trembling voice she declared that she did not want any supper, and wished her father and mother good night. They kissed her, and as usual blessed her, and she nearly wept.

Reaching her own room she threw herself into an easy chair and burst into tears. Her maid begged her to keep calm and take courage. Everything was ready. In half an hour Masha would leave forever her parent's home, her own home, her peaceful life as a young girl.

Out of doors the snow was falling fast, the wind howling. The shutters rattled and shook. In everything she seemed to recognize omens and threats.

Soon the whole house was quiet and asleep. Masha wrapped herself in a shawl, put on a warm cloak, and with a box in her hand passed out on to the back staircase. The maid carried two bundles after her. They descended into the garden. The snowstorm raged ; a strong wind blew against them, as if trying to stop the young culprit. With difficulty they reached the end of the garden. In the road a sledge awaited them.

The horses, from cold, would not stand still. Vladimir's coachman was walking to and fro in front of them, trying to quiet them. He helped the young girl and her maid to their seats, and packing away the bundles and dressing case, took up the reins, and the horses flew forward into the darkness of the night.

Having entrusted the young lady to the care of fate and of Tereshka, the coachman, let us return to the young lover.

Vladimir had spent the whole day in driving. In the morning he had called on the Jadrino priest and with difficulty came to terms with him. Then he went to seek the witnesses from among the neighboring gentry. The first on whom he called was a former cornet of horse, Dravin by name, a man in the forties, who consented at once. The adventure, he declared, reminded him of old times and of his larks when he was in the Hussars. He persuaded Vladimir to stop to dinner with him, assuring him that there would be no difficulty in getting the other two witnesses. Indeed, immediately after dinner in came the surveyor, Schmidt, with a moustache and spurs, and the son of a captain-magistrate, a boy of sixteen, who had recently entered the Uhlans. They not only accepted Vladimir's proposal, but even swore that they were ready to sacrifice their lives for him. Vladimir embraced them with delight, and drove off to get everything ready.

It had long been dark. Vladimir despatched his trustworthy Tereshka to Nenaradova with his two-horsed sledge, and with appropriate instructions for the occasion. For himself he ordered the small sledge with one horse and started alone, without a coachman, for Jadrino, where Maria ought to arrive in a couple of hours. He knew the road and the drive would only occupy twenty minutes.

But Vladimir had scarcely passed from the enclosure into the open field when the wind rose, and soon there was a driving snowstorm, so heavy and so severe that he could not see. In a moment the road was covered with snow. All landmarks disappeared in the murky yellow darkness, through which fell white flakes of snow. Sky and earth became merged into one. Vladimir, in the midst of the field, tried in vain to get to the road. The horse walked on at random, and every moment stepped either into deep snow or into a rut, so that the sledge was constantly upsetting. Vladimir tried at least not to lose the right direction, but it seemed to him that more than half an hour had passed, and he had not reached the Jadrino woods. Another ten minutes passed and still the wood was invisible. Vladimir drove across fields intersected by deep ditches. The snowstorm did not abate and the sky did not clear. The horse was getting tired, and the perspiration rolled from him like hail, in spite of the fact that every moment his legs were disappearing in the snow.

At last Vladimir found that he was going in the wrong direction. He stopped, began to reflect, recollect and consider, till at last he became convinced that he ought to have turned to the right. He did so now. His horse could scarcely drag along. But he had been more than an hour on the road, and Jadrino could not now be far. He drove and drove, but there was no getting out of the field. Still snowdrifts and ditches. Every moment the sledge was upset, and every moment Vladimir had to raise it up.

Time was slipping by, and Vladimir grew seriously anxious. At last in the distance some dark object could be seen. Vladimir turned in its direction, and as he drew near found it was a wood.

"Thank Heaven !" he thought, "I am near the end."

He drove by the side of the wood, hoping to come at once upon the familiar road, or, if not, to pass round the wood. Jadrino was situated immediately behind it.

He soon found the road and passed into the darkness of the wood, now stripped by the winter. The wind could not rage here; the road was smooth, the horse picked up courage, and Vladimir was comforted.

He drove and drove, but still Jadrino was not to be seen ; there was no end to the wood. Then, to his horror, he discovered that he had got into a strange wood. He was in despair ; he whipped his horse, and the poor animal started off on a trot, but it soon got tired; and in a quarter of an hour, in spite of poor Vladimir's efforts, could only crawl.

Gradually the trees became thinner, and Vladimir drove out of the wood, but Jadrino was not to be seen. It must have been about midnight. Tears gushed from the young man's eyes. He drove on at random, and now the weather abated, the clouds dispersed, and before him was a wide stretch of plain, covered with a white, billowy carpet. The night was comparatively clear, and he could see a small village a short distance off, which consisted of four or five cottages. Vladimir drove towards it. At the first door he jumped out of the sledge, ran up to the window and tapped.

After a few minntes a wooden shutter was raised, and an old man stuck out his gray beard.

"What do you want ?"

"How far is Jadrino ?"

"How far is Jadrino ?"

"Yes, yes. Is it far ?"

"Not far ; about ten miles."

At this answer Vladimir clutched hold of his hair and stood motionless, like a man condemned to death.

"Where do you come from ?" added the man. Vladimir had not the courage to reply.

"My man," he said, "can you procure me horses to Jadrino ?"

"We have no horses," answered the peasant.

"Could I find a guide ? Will pay him any sum he likes."

"Stop," said the old man, dropping the shutter. "I will send my son out to you ; he will conduct you."

Vladimir waited. Scarcely a minute had passed when he again knocked. The shutter was lifted and a beard was seen.

"What do you want?"

"What about your son?'

"He'll come out directly; he is putting on his boots. Are you cold? Come in and warm yourself."

"Thanks; send out your son quickly"

The gate creaked; a youth came out with a cudgel and walked on in front, at one time pointing out the road, at another looking for it in a mass of drifted snow.

"What o'clock is it?" Vladimir asked him.

"It will soon be daylight," replied the young peasant. Vladimir spoke not another word.

The cocks were crowing, and it was light when they reached Jadrino. The church was closed. Vladimir paid his guide and drove into the yard of the priest's house. In the yard his two-horse sledge was not to be seen. What news awaited him?

But let us return to the kind proprietor of Nenaradova, and see what is going on there.

Nothing.

The old people awoke and went into the sitting-room, Gavril in a nightcap and flannel jacket. Praskovia in a wadded dressing-gown. The samovar was brought in, and Gavril sent the little maid to ask Maria how she was and how she had slept. The little maid returned, saying that her young lady had slept badly, but that she was better now, and that she would come into the sitting-room in a moment; and, indeed, the door opened and Maria came in and wished her papa and mamma good morning.

"How is your headache, Masha?" (familiar for Mary), inquired Gavril.

"Better, papa," answered Masha.

"The fumes from the stoves must have given you your headache," remarked Praskovia.

"Perhaps so, mamma," replied Masha.

The day passed well enough, but in the night Masha was taken ill. A doctor was sent for from town. He came towards evening and found the patient delirious. Soon she was in a severe fever, and in a fortnight the poor patient was on the brink of the grave.

No member of the family knew anything of the flight from home. The letters written by Masha the evening before had been burnt, and the maid, fearing the wrath of the master and mistress, had not breathed a word. The priest, the ex-cornet, the big mustached surveyor, and the little lancer were equally discreet, and with good reason. Tereshka, the coachman, never said too much, not even in his drink. Thus the secret was kept better than it might have been by half a dozen conspirators.

But Masha herself, in the course of her long fever, let out her secret. Nevertheless, her words were so disconnected that her mother, who never left her bedside, could only make out from them that her daughter was desperately in love with Vladimir, and that probably love was the cause of her illness. She consulted her husband and some of her neighbors, and at last it was decided unanimously that the fate of Masha ought not to be interfered with, that a woman must not ride away from the man she is destined to marry, that poverty is no crime, that a woman has to live not with money but with a man, and so on. Moral proverbs are wonderfully useful on such occasions, when we can invent little or nothing in our own justification.

Meanwhile the young lady began to recover. Vladimir had not been seen for a long time in the house of Gavril, so frightened had he been by his previous reception. It was now resolved to send and announce to him the good news which he could hardly expect—the consent of her parents to his marriage to Maria.

But what was the astonishment of the proprietors of the Nenaradova when, in answer to their invitation, they received an insane reply. Vladimir informed them he could never set foot in their house, and begged them to forget an unhappy man whose only hope now was in death. A few days afterwards they heard that Vladimir had left the place and joined the army.

A long time passed before they ventured to tell Masha, who was now recovering. She never mentioned Vladimir. Some months later, however, finding his name in the list of those who had distinguished themselves, and been severely wounded at Borodino, she fainted, and it was feared that the fever might return. But, heaven be thanked! the fainting fit had no bad results.

Maria experienced yet another sorrow. Her father died, leaving her the heiress of all his property; but the inheritance could not console her. She shared sincerely the affliction of her mother, and vowed she would never leave her.

Suitors clustered round the charming heiress, but she gave no one the slightest hope. Her mother sometimes tried to persuade her to choose a companion in life, but Maria shook her head and grew pensive.

Vladimir no longer existed. He had died at Moscow on the eve of the arrival of the French. His memory was held sacred by Maria, and she treasured up everything that would remind her of him—books he had read, drawings which he had made, songs which he had sung, and the pieces of poetry which he had copied out for her.

The neighbors, hearing all this, wondered at her fidelity, and awaited with curiosity the arrival of the hero who must in the end triumph over the melancholy constancy of this virgin Artemis.

(*Concluded next week.*)

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

September.

GAME AND POULTRY.—Pigeon, chicken, duck, woodcock.

MEATS.—Beef, mutton, lamb, veal, ham, kidneys, liver, venison.

FRUITS.—Apples, bananas, blackberries, gooseberries, huckleberries, grapes, melons, oranges, peaches, pears, pineapple, plums, raspberries, currants.

FISH.—Bass, blackfish, bluefish, clams, cod, crabs, eels, flounders, halibut, herrings, lobster, mackerel, mussels, porgie, prawn, rockfish, salmon, trout, sea-bass, sturgeon, turtle, white fish, whiting.

VEGETABLES.—Beets, beans, cabbage, carrots, cauliflower, corn, cucumbers, egg-plant, garlic, lettuce, onions, parsley, parsnips, potatoes, radishes, rhubarb, savoy, shallots, spinach, squash, tomatoes, turnips.

PRACTICAL RECIPES.

TOMATO SOUP.—Cover a good sized soup bone with cold water and add two onions. When the meat falls from the bone add sufficient water to make four quarts and take out the bone and onion. Let it get cold, then remove the grease and add a can of tomatoes or a quart of fresh ones, a teaspoonful of sugar, a tablespoonful of corn-starch and butter rubbed together, salt and pepper. Boil for a few minutes and serve.

CANNED APPLES.—Peel six pounds of winter pippins and cut them in halves; put them in a stone jar and mix half their weight of sugar with them, and let them stand for a day and a half; then transfer them to the preserving kettle; pour a pint of water over them and let them boil slowly for an hour or so, until they are tender and clear; then slice an orange very thin and let it cook a few minutes with the apples. Fill your jars and seal them.

CREAM MAYONAISE.—One table-spoonful each of dry mustard, salt, sugar, melted butter, yolks of two eggs; mix all together. Then add one cupful of sweet cream, and lastly, one cupful of vinegar. Boil like boiled custard.

RASPBERRY VINEGAR.—Put one pint of vinegar over two quarts of raspberries and let them lie together two or three days. Mash them up and squeeze through a bag. To each pint of juice allow a pound of sugar and boil them together for twenty minutes, carefully removing the scum as it rises. Bottle when it is cold.

COFFEE JELLY.—Put seven table-spoonfuls of freshly ground coffee into the coffee pot, and mix into it the white of an egg and half a cup of cold water. Put the pot on the fire and add a quart of boiling water; beat up for a minute, then cover and let boil for twenty minutes, stirring now and then. Set off the stove, pour in half a cup of cold water and let the coffee settle. In the meantime let half a box, or one ounce of gelatine soak in one-half a cup of cold water or coffee for two hours; when the coffee is settled, add it to the gelatine and stir until the latter is thoroughly dissolved, sweeten to taste, pour into a quart bowl and set away to stiffen. Serve very cold in a glass dish, with whipped cream heaped about it.

CREAM RICE PUDDING.—Put one quart of sweet milk into a pudding dish, and set it on the back of the stove. Wash and pick over three heaping teaspoonfuls of rice and add them to the milk. Let this stand where it will be slightly warm for four or five hours, until the rice has swelled; stir frequently. Add a teaspoonful of butter, a small half cup of sugar, half a teaspoonful of salt, some nutmeg, a teaspoonful of vanilla, and bake slowly for about half an hour or until it is thick and creamy. Let it be very cold before eating.

POTATO ROLLS.—Boil six potatoes and mash them, add two cupfuls of milk, one table-spoonful of butter, the beaten yolks of three eggs, salt. When the mixture is cold, add a teaspoonful of yeast and enough flour to make it stiff; beat well, let rise, form into rolls, rise again, and bake a delicate brown.

ORIENTAL COOKERY.

PILLAU, MULLAGATAWNY AND CURRIE.

The perfect cook is a true eclectic philosopher. He aims at taking the best from the culinary wisdom and lore of each country, and thus eventually concentrates in one complete system the maxima of what is good and wholesome. We cannot but think that, generally regarded, too little attention has been paid by ourselves to Oriental cookery, whence it is quite certain much might be drawn out that would be to many among us a new table delight, besides being the acquisition of not a few thoroughly wholesome dishes to our menus. The subjoined unique collection of practical recipes for sundry forms of Oriental cookery we are pleased to place before our readers, some of whom may perhaps be enabled thereby to add not a few rarities and really appetizing and attractive dishes to their bills of fare. The first item relates to the national dish, the Turkish pillau. The recipes for Hindoo and Mussulman cookery are quite distinct one from another, the one being mostly vegetarian—or, indeed, wholly so—while the latter use meat freely. When the native asks you to partake of fowl, mutton, beef, or game, he means the pillau flavored with it, for, whatever it may be, it rarely makes its appearance in its original state, and is generally boiled so long that all the flavor goes to the rice. Pillaus, when properly cooked, are most tasty and nourishing—delightful both to the organs of taste and smell; but, if ill cooked, there is nothing more disagreeable and disgusting. Take plain boiled rice for an example: if ill cooked, can there be anything more disgusting than the sticky mess it presents; while, on the other hand, if cooked with care, there is nothing more nutritious, delicious and tempting,—and it can be eaten with anything either sweet or savory.

CHICKEN PILLAU.

Get a nice fat young fowl, put it into a saucepan with about two quarts of water, a large onion (whole),

three or four cloves of garlic, also whole, four bay leaves, twenty-four cloves, two sticks of cinnamon, a blade of mace, the seeds of twelve cardamums, one teaspoon of salt; boil till the fowl is tender. Now remove the fowl, and put into the liquor one pound of the best Patna rice; stir occasionally; watch it narrowly. The moment the rice is soft drain it through a wire sieve (do not waste the liquor, for it makes delicious soup); steam it before the fire for about half an hour or so. Before serving remove the onion, garlic, bay leaves, cinnamon, and mace, but not the cloves and cardamum. Put your fowl on a dish, cover it over with the rice, and garnish it with fried almonds, raisins, and hard-boiled eggs, also onions fried brown and crisp. If you wish for a more savory dish still, cut your fowl into joints, and dust it over with currie powder and spice. Put two ounces of butter into a frying-pan with an onion sliced very thin. When the onion is brown, put in the jointed fowl and fry. Serve in the same way as the above. Both ways of cooking the pillau are delicious.

SWEET PILLAU.

Boil one pound of the best Patna rice in two quarts of strong white stock, without any seasoning whatever except a pinch of salt. Watch your rice carefully; the moment it is tender, drain and steam before the fire. Now prepare a syrup flavored with whatever you like. In India the usual flavoring is lemon, cocoanut, musk, or rose water. Turn the rice into a dish, put a little piece of the best butter in it, stir it lightly with a fork, for the butter to mix with it, then pour over your syrup. Garnish the top with fried almonds or pistachios and sultanas. If preferred, the rice may be colored with a little saffron—a thing very much used in India for all dishes made of rice.

MULLAGATAWNY SOUP.

Make a good strong stock of shin of beef, about two quarts or more. Cut up an onion into very thin rings, put it in a saucepan with two ounces of butter; fry a golden brown; now put in one heaped-up table-spoonful of currie powder; fry a minute longer; then add your stock, twelve cloves, the seeds of twelve cardamums, three bay leaves, a sprig of tarragon and chervil, three cloves of garlic, a teaspoonful of salt. Boil for about twenty minutes, then add two ounces of Edwards' New Tomato Soup, which gives the mullagatawny a most delicious flavor. Leave it on the hob for about two hours; do not let it boil, but very gently simmer. Before serving, strain the soup, and add either the juice of half a lemon or a table-spoonful of tamarinds pulped in a little warm water and strained. The tamarind gives a peculiar flavor of its own that is very highly approved of.

WHITE MULLAGATAWNY.

This is a soup very well suited for fast days—and is nourishing withal. Cut up an onion into thin rings, fry it in two ounces of butter a golden color, then add a teaspoonful of currie powder, and a table-spoonful of the best currie paste, and then one quart of water, twelve cloves, the seeds of twelve cardamums, three bay leaves, three cloves of garlic; let it boil up, then add two ounces of Edwards' White Vegetable Desiccated Soup; boil until the soup thickens, then add one quart of milk, stir well, salt to taste, set it on the hob to simmer gently. Before serving, strain, and serve with a separate dish of boiled rice, and lemons cut in slices. If preferred, this soup can be made with best stock instead of milk, but in either case thicken with Edwards' White Desiccated Soup, which is invaluable for Indian cookery, such as soups and curries, etc.

DHAL CURRIE.

Boil half a pint of lentils in one quart of water till quite soft and pulpy; set them aside. Now cut up an onion into thin rings, fry in two ounces of butter, and add to it the currie powder, and all the flavorings as for other curries. Then put in your lentils, let it boil for about an hour, and serve with a dish of plain boiled rice.

PLAIN DHAL.

Boil some lentils as for the above recipe; put them aside. Cut up an onion into thin rings, fry a delicate golden color in two ounces of butter. Now add your lentils, twelve cloves, two cloves of garlic chopped very fine, the seeds of twelve cardamums, three bay leaves, and salt to taste. Boil for about half an hour; serve with a dish of plain boiled rice separately, and lemons cut in slices. This a favorite Anglo-Indian breakfast dish.

LARKS OR PIGEONS—INDIAN STYLE.

Prepare your birds as for roasting; pass half a pound of the best beef through a mincing machine; now chop up an onion, two cloves of garlic, a sprig of tarragon and chervil, two bay leaves, very fine; fry all in two ounces of butter, then add a spoonful of the best currie powder, stir, and then add your mince; let it cook till the mince is done through. Now stuff your birds with the mixture and roast them a good color, basting them with butter mixed with a little currie powder or paste. When done, dish them prettily with salads of all kinds as a garnish, or, if liked, with gravy on toast, with a good tomato-sauce gravy flavored with currie paste. This is a delicious dish. Teal and quail can be dressed in the same way.

CURRIE PUFFS.

Make a puff paste in the usual way, roll it out as for jam turnovers, fill it with the following forcemeat, and make it in the shape of jam tarts; fry them in butter till they are a pale golden brown, put them on paper to drain the fat off, and serve with fried crisp parsley.

FORCEMEAT FOR THE ABOVE.

Half pound of the best beef passed through a machine; cut up an onion into thin rings, fry a nice color, add a table-spoonful of currie powder, and then your meat, the seeds of twelve cardamums, twelve cloves, two cloves of garlic chopped very fine, and salt to taste. These puffs are delicious.

INSOMNIA.

SOME OF THE CIRCUMSTANCES THAT DO MURDER SLEEP.

Inability to sleep is about as unnatural a condition as can be imagined, and one that has been engendered by unnatural ways of living. The causes are so various that no special plan of treatment would suit all cases; and permanent relief can only be obtained through the general adjustment of one's habits to the accepted laws of hygiene. In this respect, regularity—in meals, in taking exercise, in rising and retiring—is an important factor. To practice going to bed early one night and late the next, sleeping one night eight or ten hours and another perhaps only three or four, and continuing this for any length of time, is almost sure to produce sleeplessness that will shortly become chronic and very difficult to overcome. Some, indeed, are so sensitive to any irregularity that a single infraction of the regular rule for retiring will prevent sleep, not only on the special night, but sometimes for succeeding nights also. Gentle calisthenic exercise taken just before retiring, or a sponge bath followed by brisk rubbing with a coarse towel, will usually prevent this restlessness from becoming chronic. One of the chief causes of sleeplessness is a sedentary mode of life. The bodily functions respond to the natural stimula of fresh air, light and exercise, and when these are withheld the result is sleeplessness at night. Nothing conduces so greatly to healthy slumber as abundant exercise in the open air; and this should be the first remedy tried in cases of wakefulness that threaten to become habitual. A good brisk walk taken an hour or two before bedtime, preferably with a pleasant companion, or, if alone, with some object in view besides mere exercise, and always avoiding unpleasant thoughts, will usually furnish the stimulus required. Dancing, cycling, or any form of exercise which quickens the sluggish circulation and sends the blood to the surface of the body, thus relieving the brain, is conducive to sleep. If those engaged in business, especially of the class demanding close mental application, could exert the will power necessary to entirely banish all thoughts of their work when it is ended for the day, the insomnia that has almost become a national malady would speedily decrease. The respite from care, for even a few hours, will reinvigorate the brain, and work will be taken up with new energy each succeeding day. The more complete the relaxation the more beneficial will be the result. If before restlessness at night becomes habitual wakefulness, the sufferer would realize the danger and discover the cause—whether it be want of exercise or fresh air, improper food, too close application, or insufficient recreation—and persevere in some simple remedy, nine times out of ten—unless there is some organic difficulty—the tendency to insomnia might be arrested. Alcoholic liquors and drugs should never be resorted to. They may induce sleep, but the habit once formed it will be found impossible to sleep without their aid, and in increasing doses. If any stimulant be desired, a glass of hot milk is preferable, in every way, to liquors and narcotics. Many persons have found a glass of cold milk and a cracker, taken just before going to bed, very efficacious in promoting sleep. A glass of lemonade, not too strong and not sweet, is another simple soporific. Moderate warmth also induces sleep, especially in winter; sleeplessness is often the penalty paid for getting into bed with cold feet and hands. A warm bath taken just before going to bed is efficacious even in quite obstinate cases of sleeplessness, and has the advantage of being quite harmless. Always rub briskly with a brush or coarse towel, to bring the blood to the surface, thus relieving the brain. Whenever possible, persons inclined to wakefulness should sleep alone, and from a hygienic point of view separate beds are always preferable for both adults and children. The bed should be moderately hard (never feathers), turned and thoroughly aired every day, the bed clothing light in weight and only sufficient to maintain a natural degree of warmth. Soft wool blankets are best. A good bed in a well-ventilated room, good food of the right sort, in proper quantities and at proper times, good air, regular bathing, sufficient exercise to produce a pleasant weariness, congenial occupation, absolutely regular habits, strict avoidance of stimulants and narcotics, a clear conscience, and the exercise of sufficient will power, will in time overcome the most obstinate case of insomnia.—*Demorest's Magazine, September.*

PHOSPHORESCENCE.

THE PHENOMENON ATTRIBUTED TO LUMINOUS BACILLI.

Published discussions and treatises on this subject have for the most part been confined so exclusively to disease germs, that for the average reader the mere mention of the term "bacilli" is sufficient to conjure up visions of cholera, diphtheria, tuberculosis, and other of the many ills which flesh is heir to. Nevertheless, the history of disease germs is but a small branch of the science of bacteriology, which embraces the study of an infinite variety of life forms, some of which are simply innocuous to higher organisms, others essential to their well-being, and all deserving of careful study. Among the many interesting types in this world of life laid bare by the microscope are those which generate light, and to these I propose to confine myself in the present papers. The readers of this magazine will remember that in a previous article the bacteria were said to have been classed according to their shapes as spherical, cylindrical, and spiral; the luminous creatures with which we are now con-

cerned belong to the cylindrical or bacilli type. It is a matter of common observation that raw flesh or fish exhibits a greenish luminous appearance in the dark. This luminosity is due to the presence of a bacillus to which the name "Bacterium phosphorescence" has been given. Under the microscope it exhibits itself as a short, thick staff, rounded and stiff at both ends. The luminous bacillus is very widely diffused. The readiest means for investigating it are to institute researches in fresh sea-fish. Take some fresh herrings or other sea-fish, place them in a covered dish, or between two plates, at a temperature of 60 deg. or upward, and after an interval of frequently not more than twenty-four hours, luminous spots will appear on the surface of the fish and spread rapidly, covering the whole fish in the course, generally, of the second day. If we now leave the fish uncared for, putrescence, due to the action of the bacteria, will set in, and as it extends, the beautiful pale-green phosphorescence disappears. The luminous bacilli which flourished for a time under conditions favorable to their well-being, have gone down in the struggle for existence with another set of bacteria better adapted to the newly evolved conditions. The phosphorescent bacilli can, however, be transplanted amid conditions favorable to their persistence. They have been transferred to glass tubes containing gelatine solution, in which they thrive and afford opportunities for the study of their life history. The luminous bacilli thrive at temperatures as low even as from 32 deg. to 60 deg. Fahr., but temperatures between 60 deg. and 80 deg. are more favorable to their development. They can exist in an atmosphere containing oxygen, or in one free from it; but in the absence of oxygen luminosity is not generated. If we prepare a test tube in such a manner that its inner wall is covered with only a very thin sheet of gelatine, the whole surface is covered so thoroughly with the inserted bacilli, and the tube becomes so luminous, that the figures on a watch may be read and the hands seen by its light. Indeed, one bacteriologist has suceeded in photographing the phosphorescent bacilli by their own light. These experiments also afford evidence of the modification of bacilli by change of environment, a fact which plays so important a feature in the system of inoculation as a remedial measure in disease. At first the phosphorescent bacilli flourish vigorously in the gelatine, and will even maintain their luminosity for months, but if we continue to transfer them from generation to generation to fresh gelatine, the luminosity gradually disappears. Immediately after each transplantation into a new medium the luminosity reappears with subdued brilliancy, but the power of generating it is lost in a few days. It can, however, be restored to its pristine vigor by the addition of two or three per cent. of common salt to the gelatine, from which we gather that natural or artificial sea-water or boiled fish favor the appearance of phosphorescence. The sea is especially the home of phosphorescent organisms, and here, too, the phosphorescent bacillus has his home. Prof. Fisher has discovered in West Indian waters a new bacillus which differs very materially from the one above described. He is more slender, more lively in his movements, and instead of a greenish, emits a bluish phosphorescence. He has been named "West Indian luminous bacillus," to distinguish him from the more familiar one above described. He, too, can be propagated in gelatine in test tubes, but he has his own peculiarities. A true child of the Tropics he will not flourish at a temperature below 60 deg. Fahr., and it is only at a temperature of 86 deg. or upward that he shows vigorous life, fecundity, and brilliancy. "The best conditions for studying him," says Prof. Karl Frankel, in his *Grundriss der Bakterien Kunde*, "is unquestionably on the surface of boiled fish. By inoculating this with an artificial culture of the bacillus it will be found covered in a few hours with a thriving colony which, in the dark, throws off a beautiful bluish light." Even our German waters have their characteristic luminous bacilli. Prof. Fisher has discovered one in Kiel harbor which reminds one, in many respects, of his West Indian congener. Like him, he is full of animation, and radiates similarly a bluish-white light, but he has his own especial idiosyncrasies which have been held to justify his recognition as a distinct species under the name of "native luminous bacillus." He is a true child of the North, and in contradistinction to his West Indian congener, he finds himself in his life-element at a temperature below 60 deg., at which the vitality of his tropical congener is suspended. Indeed, he can stand a cold below zero and shed his bluish-white light around a freezing point. To the numerous species of luminous living creatures which animate earth, and sea, and air, science has now added three of the most diminutive. But the method or process by which all these creatures generate their light is still hidden behind an impenetrable veil, which science has hitherto striven in vain to lift.—*Die Gartenlaube, Leipsic.*

STORM CLASSIFICATION.

THE NOMENCLATURE OF ATMOSPHERIC DISTURBANCES.

A correspondent of the *Tribune* having inquired what is the difference between a cyclone and a tornado, that journal turns its weather side to the subject to the following interesting and instructive effect: Cyclones and tornadoes are both wind storms, with more or less rain, and they both whirl; otherwise, they are very unlike. The cyclone is from 200 to 1,500 miles across, is generally born at sea, does most of its work there, and lasts several days, sometimes even weeks, before dying out. Its extent is so great that it takes many hours, and often a day or two, to pass a given point; and though there is a gradual change of direction, the wind blows apparently as a straight-line gale. The tornado is a land storm, measuring only a few hundred feet in diameter. The whole thing can be discerned at a glance. It sweeps over a narrow

Buffalo Lithia Water, Spring No. 2, in Bright's Disease, Gout, Stone in the Bladder, and Diseases Generally of Uric Acid Diathesis, Etc., Etc.

DR. WM. A. HAMMOND, of Washington, D. C., Surgeon General U. S. Army (retired), Professor of Diseases of the Mind and Nervous System in the University of New York, etc.

"I have for some time made use of the BUFFALO LITHIA WATER in cases of AFFECTIONS of the NERVOUS SYSTEM, complicated with BRIGHT'S DISEASE OF THE KIDNEYS or with a GOUTY DIATHESIS. *The results have been eminently satisfactory.* Lithia has for many years *been a favorite with me in like cases, but the* BUFFALO WATER CERTAINLY ACTS BETTER THAN ANY EXTEMPORANEOUS SOLUTION of THE LITHIA SALTS, and is, moreover, better borne by the stomach. I also often prescribe it in those cases of CEREBRAL HYPERÆMIA resulting from OVER MENTAL WORK—in which the condition called NERVOUS DYSPEPSIA exists—*and generally with* MARKED BENEFIT."

DR. WM. B. TOWLES, Professor of Anatomy and Materia Medica, in the Medical Department of the University of Virginia.

"BUFFALO LITHIA SPRINGS, No. 2, belongs to the ALKALINE or, *perhaps, to the* ALKALINE SALINE Class, *for it has proved far more efficacious in many diseased conditions than any of the simple* ALKALINE waters.

"*I feel no hesitancy whatever in saying that in* GOUT, RHEUMATIC GOUT, RHEUMATISM, STONE *in the* BLADDER, and in all diseases of URIC ACID DIATHESIS, *I know of no remedy at all comparable to it.*

"*Its effects are marked in causing a disappearance of* ALBUMEN *from the urine. In a* single case of BRIGHT'S DISEASE *of the* KIDNEYS, I witnessed *decided beneficial results from its use, and from its action in this case I should have great confidence in it as a remedy in certain stages of this disease.* In DYSPEPSIA, especially that form of it in which there *is an excessive preauction of* ACID *during the process of nutrition*, in some of the PECULIAR AFFECTIONS *of* WOMEN, notably in SUPPRESSION of the MENSES, and in CHRONIC MALARIAL POISONING, etc., I have found it highly efficacious."

DR. G. HALSTEAD BOYLAND, late Professor of Surgery, Baltimore Medical College, late Surgeon French Army (Decorated), Member Baltimore Academy of Medicine, Member of American Medical Association.

"In BRIGHT'S DISEASE of the KIDNEYS, ACUTE or CHRONIC, BUFFALO LITHIA WATER, Spring No. 2, is, in my experience, *without a rival*, whether in the PARENCHYMATOUS form or INTERSTITIAL NEPHRITIS. In cases in which the ALBUMEN in the URINE reached as high as 50 per cent., I have known it under a course of this water gradually diminish and finally disappear, at the same time other alarming symptoms were relieved and the sufferers restored to health.

"In STONE in the BLADDER of the RED LITHIC ACID and the WHITE PHOSPHATIC DEPOSIT, the SOLVENT power of this water is *unmistakable.*"

Water in cases of one dozen half gallon bottles, $5.00 f. o. b. here.

THOS. F. GOODE, Proprietor, BUFFALO LITHIA SPRINGS, VA.

track, and does its work in a city as large as Louisville almost in an instant. Its whole lifetime, during which it may have traveled twenty-five or fifty miles, is seldom over an hour or two, often less. It is apt to have thunder-shower accompaniments—gusts, rain or hail and lightning; but its most obvious characteristic is a funnel-shaped cloud descending like the slack of a balloon, or an elephant's trunk, from the main thunder-cloud. This vapor-spout is the axis of the "twister." In considering both cyclones and tornadoes, the rate of progress is much less important than the gyratory velocity. In a cyclone the latter is 100 miles an hour, sometimes, near the centre, the violence being enhanced by the rather gusty character of the protracted gale. The tornado whirls at a rate variously estimated from 500 to 2,000 miles an hour. Though ephemeral and diminutive, it has vastly greater violence. To call it a "cyclone" is to belittle its terrors. True cyclones are exceedingly scarce, while tornadoes are numbered by the hundred every season. Cyclones are of tropical origin, and are chiefly found in five localities—the West Indies, Bengal Bay, and the Chinese coast, north of the equator; and in the South Indian Ocean off Madagascar, and the South Pacific near Samoa. In the Antilles there are not half a dozen on the average every season. They usually come only between July and October. For the term "cyclone," then, the news-gatherer has but little legitimate use. "Hurricane" is the old Spanish name for a West Indian cyclone; but it is now used also to designate a long-continued wind of extreme violence. In Beaufort's scale one rises through "light," "gentle," "fresh" and "strong breezes," "fresh," "strong" and "whole gales" and "storm," to "hurricane," by which the mariner understands "a velocity of ninety miles or more an hour." For a short, sudden blast, such as often comes in a summer storm and wrecks a yacht, levels trees, unroofs buildings, and works other like damage, "squall" is the proper term, unless there is good evidence of a rotary motion and a funnel-shaped cloud. Nor will the intelligent reporter deem "squall" inadequate for his purposes when he recalls that the British man-of-war Eurydice, with officers and crew, suddenly capsized and sunk (March 24, 1878) in a storm of this type.

Exhaustion

Horsford's Acid Phosphate.

The phosphates of the system are consumed with every effort, and exhaustion usually indicates a lack of supply. The Acid Phosphate supplies the phosphates, thereby relieving exhaustion, and increasing the capacity for labor. Pleasant to the taste.

Dr. A. N. KROUT, Van Wert, O., says:
"Decidedly beneficial in nervous exhaustion."

Dr. S. T. NEWMAN, St. Louis, Mo., says:
"A remedy of great service in many forms of exhaustion."

DESCRIPTIVE PAMPHLET FREE.

RUMFORD CHEMICAL WORKS,
PROVIDENCE, R. I.

BEWARE OF SUBSTITUTES AND IMITATIONS.

CAUTION:—Be sure the word "Horsford's" is *printed* on the label. All others are spurious. Never sold in bulk.

BUSINESS NOTES.

ARISING AS BY MAGIC.

On the shores of Lake Kampeska, one of the most beautiful of the many lovely sheets of water in South Dakota, and where twelve years ago there was not a white man living within 125 miles, there is to-day in a rich and prosperous agricultural valley of the richest land in the West, Watertown, a city of 6,000 inhabitants, and a better built city than was ever seen in the East of three times its size. As a manufacturing city Watertown is destined to rival Minneapolis and Omaha in a very few years. It is in the centre of the richest farming country of the West, a country which has made thousands of farmers wealthy in one year. A Professor of the State University, writing to a Detroit paper a short time ago, said: "I am standing on the porch of the house of an old friend, who left Michigan five years ago for Watertown, S. D. He arrived in this country with a team of horses, six children, and less than $100 in money. To-day he owns 1,200 acres of the richest and most beautiful land man's eyes ever rested upon. He doesn't owe a dollar, his land is worth $60 to $70 per acre, he has in his granary 8,000 bushels of last year's wheat, will harvest this year 17,000 bushels more, and his fields are covered with the finest stock. From where I am sitting I can see half a dozen other farmers as prosperous as he. In this country the farmer is monarch, the tiller of the soil is king."

SUGAR IS DOWN.

The best of sugar, at the lowest prices, now enables every family to preserve summer fruits for winter use at small expense. Ayer's Preserve Book, just issued, contains the latest and best receipts for canning, preserving, making jellies, catsups, pickles, etc. Ask your druggist for a copy, or send a two-cent stamp to J. C. Ayer Co., Lowell, Mass.

AN OXIDE OF GOLD.—Using a fine sheet of gold as positive electrode in sulphuric acid or nitric acid solution, W. Hampe found that the same became colored brown, and finally a reddish brown powder fell to the bottom of the electrolyzing dish. This was proved qualitatively to be a hydrate of gold formed by the oxidizing action of the electrolytically evolved oxygen. On drying over sulphuric acid, and then heating, it exploded violently.

METEORITE.—Prof. Foote, of Philadelphia, has collected some remarkable meteorites, at Canon Diaplo, Yavapai Co., Arizona. The largest mass weighs 250 lbs., and another 154 lbs. A specimen which he sent to Dr. Koenig was recently described by him before the Academy of Natural Sciences. Dr. Koenig's analysis gave 2 9-10 per cent. nickel, and in the only piece which has yet been cut a cavity was exposed containing small diamonds. As this is the first instance of the occurrence of this gem in meteoric iron, the find will be of great interest to scientists.

PURIFICATION BY COLD.—Pictet, who has taken out a patent for the process, has discovered that from the purest chloroform of commerce, if cooled down to about 70 deg., there separates out a crystalline body, which is then drained from the part which remains liquid. This liquid portion is then exposed to a temperature below 100 deg., when the chloroform itself crystallizes out, and can be separated from an impurity which remains liquid. Chloroform purified in this manner is a colorless liquid, having at 15 deg. the sp. gr. 1.51. It is indefinitely permanent on exposure to light. Whilst the so-called pure chloroform of commerce takes a greenish color if shaken up with a solution of potassium, dichromate and sulphuric acid, if Pictet's chloroform is similarly treated the chromic mixture retains its yellowish color.

ORIGINAL. No. 34.

Small Fresh Fish Baked in a Crust.

BY MRS. D. A. LINCOLN,
Author Boston Cook Book.

Use small fresh fish, like trout, scup, perch, etc. Clean them and wipe dry. Cut gashes one inch apart through the thick flesh on each side. Sprinkle well with salt and pepper. Make a rich crust, with 1 quart flour, into which mix thoroughly 4 level tea sp. Cleveland's baking powder and 1 tea sp. salt. Moisten with thin cream sufficient to make a dough to roll out. Divide into two parts, and roll each part ½ inch thick. Lay the fish on one part, leaving two inches space between each fish. Put the other half of the crust over Cut through the crusts around each fish; pinch the edges together tightly, and lay them some distance apart on a baking tin. Bake about ½ hour. Serve with egg sauce. Cook 1 tea sp. minced onion and 2 table sp. flour in 2 table sp. hot butter, add gradually 1 pint hot milk. Stir as it thickens, and season with 1 tea sp. salt, ⅛ salt sp. white pepper and 1 table sp. lemon juice. Add the chopped whites of three hard boiled eggs, and the yokes mashed and sifted, and serve very hot.—(Copyright, 1891, by Cleveland Baking Powder Co.)

Use only Cleveland's baking powder, the proportions are made for that.

Cleveland's Baking Powder is wholesome, leavens most and leavens best. Try it.

25 CTS. PISO'S CURE FOR CURES WHERE ALL ELSE FAILS. Best Cough Syrup. Tastes good. Use in time. Sold by druggists. CONSUMPTION 25 CTS.

Fine Table Wines

From our Celebrated Orleans Vineyard.

Producers of the **ECLIPSE CHAMPAGNE,**

Grand Sundsthy & Co

530 Washington St. SAN FRANCISCO.

GENERAL AGENCIES:
NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOSEPH R. PEEBLES' SONS CO., 73 West Fourth Street.
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.

PURE PEPSIN

In Powder and Scale.

MANUFACTURED BY

ARMOUR & COMPANY, Chicago.

Guaranteed free from adulteration or make-weights: of excellent physical properties and high digestive power.

Under similar conditions, **ARMOUR'S PEPSIN** will exhibit greater activity than any other pepsin now before the profession.

The Manufacturers will be pleased to supply members of the Medical Profession with samples of their pepsin, and with full details regarding digestive strength, if desired.



GOLD MEDAL, PARIS 1889.



W. BAKER & Co.'s

Breakfast Cocoa

from which the excess of oil has been removed,

Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

HAMMOND'S

CELEBRATED

Calumet Oleomargarine

Strictly pure, cheap and healthful.

Ask your grocer for it.

Put up in packages of all sizes, also prints and rolls.

G. H. HAMMOND CO.,

607 to 615 THE ROOKERY,

CHICAGO.

Also offices at Boston, South Omaha, Neb., and Hammond, Ind.

HAY FEVER For the cause, (Not Cure), which is **preventable. Sufferers only** address

THEODORE RUE, Box 199, BEVERLY, N. J.



DETECTIVE! WE WANT A MAN IN every **locality** to act as **Private Detective** under our instructions. Send stamp for particulars.

WASHINGTON DETECTIVE AGENCY,
Box 787. Washington, Iowa.

WATERTOWN, SOUTH DAKOTA.

In previous advertisements we have said little of what nature has done in providing Watertown with pleasant and picturesque surroundings; it is, however, a magnificent setting for the two jewels—Lakes Kampeska and Pelican—which the Creator has placed in this prairie crown.

LAKE KAMPESKA is a body of pure spring water, covering an area of eighteen square miles, mostly surrounded by high embankments. A clean, gravelly beach from twenty to thirty feet in width skirts the entire lake, except where broken in a few places by large boulders extending to the water's edge. It is fed by numerous large springs, insuring a continuous and inexhaustible supply of

THE PUREST DRINKING WATER IN THE WORLD.

The bottom, like the shores, is of sand and gravel, the water clear and cool. Fish abound in great quantities, affording plenty of sport for those who enjoy angling. Situated three and one-half miles west of Watertown, it is the source of water supply, and thus is Watertown doubly fortunate, having so lovely a pleasure resort at her very door, and such an inexhaustible supply of pure water for domestic purposes. Being connected with the city by a motor line, safe and rapid transit is afforded.



VIEW ON LAKE KAMPESKA, NEAR WATERTOWN — LAKEVIEW PIER AND STEAMER.

LAKE PELICAN is about one-half the size of Kampeska, and is situated but one and one-half miles from the city. The water is not so deep nor are the shores as pebbly as those of the former lake. In winter, Lake Pelican affords rare opportunities for ice-boating, though the success of this sport depends somewhat upon the fall of snow.

The attractions of these two bodies of water are features of which no other city in South Dakota can boast.



WINTER SPORTS—ICE-BOATING ON LAKE PELICAN, NEAR WATERTOWN.

In a future issue we shall speak particularly of the unparalleled advantages of Watertown as a manufacturing site and give, from official sources, statistics of the comparative profit of manufacturing in the East and West.

MAPS AND ILLUSTRATED PAMPHLETS giving full statistical details, and describing the Lands for sale adapted for Residences, Business, Manufacturing, or Agricultural purposes, sent ***Free to any Address,*** apply at the offices of the

Watertown Land and Improvement Co., EQUITABLE BUILDING, **Boston, Mass.**

CONFEDERATE MONEY.

Warranted Genuine and in Good Condition.

We are extensive dealers in Confederate Money—rare relics of our late civil war; also Bullets, Cannon Balls, etc. We want agents in every city North to sell these mementoes, and we will pay agents handsomely to sell our goods. We will furnish the money to those desiring at the following retail prices: Shinplasters, 10, 25, 50 and 75 cents each, or the entire set 50 cents. Complete sets, consisting of $100, $50, $20, $10, $5, $2, $1, 50c., $1 per set. $500 bills, $2.50 each. $100 bills, 15 cents, or two for 25 cents. $50 bills, 10 cents, or two for 15 cents. $5 and $20, 5 cents each. 50c., $1 and $2, 25 cents each. Inquirers enclose stamp for reply.

Publishers of SOUTHERN AGENT, Atlanta, Ga.

LITTLE BOYS AND GIRLS

MAKE EASILY $2 A DAY.

Write for particulars. Address

BARKER PUBLISHING COMPANY, Atlanta, Ga.

$5, $10 and $20

CONFEDERATE BILLS,

only five cents each. AGENTS WANTED.

SOUTHERN STAR, Atlanta, Ga.

PUBLICATIONS OF THE

ANALYST PUBLISHING CO.

THE AMERICAN ANALYST.
Weekly. Every Thursday. $1 per year.

THE ROOFER, TINNER AND SHEET-IRON WORKER.
Monthly. 15th each month, $1 per year.

THE LEATHER MANUFACTURER.
Monthly. 1st each month. $3 per year.

Reliable agents and representatives wanted everywhere on liberal terms. Address

ANALYST PUBLISHING CO.
19 PARK PLACE, NEW YORK.

"BILLET"

are

Carefully Selected

French Sardines,

Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS.

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,

HOWARD STREET, BOSTON, MASS.

HARTSHORN'S SELF-ACTING SHADE ROLLERS

NOTICE SCRIPT NAME OF Stewart Hartshorn ON LABEL, AND GET THE GENUINE HARTSHORN

The Old Doctor's Book of Secrets.

Tells everything! Over 400 pages, closely printed, with illustrations. Contains medical receipts and prescriptions, and much valuable information all young men should know. Sent securely wrapped in plain wrapper, postage prepaid, to any address for $1.00.

(Send for it. One receipt alone may save you many times its cost.

EUREKA PUB. CO., Box 441, Chicago.

LADY AGENTS WANTED.

I have a medical specialty for ladies use, which is one of the best selling articles in the country. You can make a good income handling it, and at the same time be doing your sex a great benefit. Write me at once for full information and exclusive territory. If you wish a sample sent enclose 12 cents postage. Dr. H. H. Jackson, 103 State Street, Chicago.

We can save you Fifty Dollars when you Build. See



A complete set of Plans to build from, simply state about price of dwelling desired. 25 cts. in stamps. Our book "Beautiful Homes." 25 cts. Our monthly book "The National Builder," 25 cts. Address

The National Builder, Adams Exp. Bldg., Chicago, Ill.

THE QUEEN'S PRIZE SCHOOL OF HISTORY.

About two years ago the publishers of THE CANADIAN QUEEN added what has proven to be a very popular and successful feature to their publication in establishing their Prize History School. It has offered competitive examinations in English, Canadian and American History, giving valuable rewards to those making the most correct answers. During this time there have been added the names of over forty thousand new subscribers to their books. Rewards have been made by THE QUEEN which have cost them in cash over ten thousand dollars. THE QUEEN'S Prize School of History has received the sanction and support of the clergy, press, and, in fact, of the best people of the Dominion of Canada. The following, taken from a leading daily newspaper, expresses an opinion which is universal:

A HANDSOME PRIZE.

AN EVIDENCE OF WHAT A GENUINE MAGAZINE COMPETITION OFFERS.

"On Friday there arrived from Toronto, for Miss M. Hora, a handsome Shetland pony, harness and cart, being the first award in the Royal Quilt Competition of THE CANADIAN QUEEN magazine. It attests the genuine nature of the magazine's contests by its excellent condition and value. THE QUEEN has frequent competitions and has made innumerable awards, displaying a generosity quite surprising to those who have had experience of the limited field for Canadian journalistic enterprise. But THE QUEEN has been a success as a business venture from the start, and is growing in literary excellence steadily. It covers the field of fashion, as well as light reading; talks to the household, the young, and, indeed, all home classes. The competitions have been used to assist the introduction of the magazine, for where it is introduced it is quite certain to remain a monthly guest. The leading prizes have been made, as instance this latest to Kingston, while many smaller prizes have rewarded the moderately successful among competitors. THE CANADIAN QUEEN is truly royal in its ways."—*The (Kingston, Ont.) Daily British Whig*, June 27th, 1891.

QUESTIONS IN AMERICAN HISTORY.

1.—Give the names of the early navigators who it is claimed by historians first discovered America.
2.—From whom has America taken its name?
3.—What class and nationality first settled Virginia? New York? Massachusetts? Pennsylvania? Maryland?
4.—What action did the Continental Congress of 1774 take and what was the result of that action?
5.—What was the first battle fought in the War of the Revolution?
6.—What nation rendered the Americans great assistance in the War of the Revolution?
7.—Give the names of the committee appointed to draft the famous Declaration of Independence.
8.—What was the date of the signing of the United States Constitution?
9.—After becoming a nation and before the great Civil War, what were the principal conflicts which engaged the Americans?
10.—What was the direct cause of the Civil War? What Generals of the Northern Army have occupied executive positions under the Federal Government since the closing of the War? Who was Commander-in-Chief and who were the principal Generals of the Confederate Army during the struggle?
11.—How long did this War last and what is the computed loss of life?
12.—What can be said to day of the United States as a nation?

To the *First* gentleman sending the correct answers to the above questions in American History the publishers of THE QUEEN will present "**Majestic**" acknowledged the **Handsomest and Finest Riding Horse in Ontario.** ("Majestic" is sixteen hands high, thoroughbred, seven years old, and valued at $350.00.) To the *First* lady the publishers of THE QUEEN will present an elegant **Jacket of Genuine Alaska Seal** to be made according to the measurement supplied by the winner. To the *First* boy under sixteen years of age the publishers of THE QUEEN will present a **Little Giant Safety Bicycle** valued at $75.00. To the *First* girl under sixteen years of age the publishers of THE QUEEN will present an elegant **Music Box,** playing twenty tunes, finely finished and valued at $55.00.

To the gentleman from whom the *Last* correct answers are received before the close of this Competition, the publishers of THE QUEEN will present a **First Cabin Passage to Europe and Return** and **$200 in Gold** for expenses. This trip can be taken by the winner any time before October 1st, 1892. To the lady from whom the *Last* correct answers are received before the close of this Competition the publishers of THE QUEEN will present a **Pony, Cart and Harness.** To the boy under sixteen years of age from whom the *Last* correct answers are received before the close of this Competition the publishers of THE QUEEN will present a **Solid Gold Watch** containing one of the best American movements, and valued at $75.00. To the girl under sixteen years of age from whom the *Last* correct answers are received before the close of this Competition the publishers of THE QUEEN will present an elegant **Solid Gold Watch,** containing one of the best American movements, and valued at $65.00.

ADDITIONAL PRIZES IN ORDER OF MERIT: Silver Tea Services, Ladies' Gold Watches, Silk Dress Patterns, French Mantel Clocks, Portiere Curtains, Toilet Cases, Manicure Sets, and many other useful and valuable articles.

The object of the publishers in offering these liberal prizes is to introduce THE QUEEN Magazine into **new** homes. Answers must be mailed *on or before* November 10th, 1891, and must be accompanied by $1.00 for one year's subscription to THE CANADIAN QUEEN. Prizes awarded to subscribers residing in the United States will be shipped to them **free of duty.** The distribution of awards is in the hands of disinterested persons, and decisions will be based on the correctness of answers. Use your own language in wording the answers. No corrections can be made after your answers are mailed. THE QUEEN is a large, forty-eight page family magazine, especially interesting to ladies and children, and visits regularly **over one hundred thousand of the best homes** in Canada and the United States. The awards in THE QUEEN'S Prize School of History are made strictly with regard to merit, without partiality to persons or locality. The decisions must be accepted as final. If you have never seen a copy of THE QUEEN send six U. S. two cent stamps and receive a late number, post paid, containing letters from those who have received rewards in previous contests.

Address THE CANADIAN QUEEN, PRIZE SCHOOL OF HISTORY, 58 BAY STREET, TORONTO, CANADA.

TABASCO PEPPER SAUCE,

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced by connoisseurs to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY'S SON,

NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

We shall be glad to supply our readers with any periodical published at club rates.

Send us a postal naming periodical and we will quote you prices.

ANALYST PUBLISHING CO.,
19 Park Place,
New York.

GOITRE, or THICK NECK.

I have a positive, speedy, cleanly, harmless and almost inexpensive cure. Come or write to me at 28 Arlington Court, CLEVELAND, Ohio. It is no iodine smear. Cure made permanent.

Dr. J. CASKEY.

NATRONA BI-CARBONATE OF SODA.

ABSOLUTELY PURE.

The nature of the raw material from which NATRONA BI-CARBONATE OF SODA is made—viz., kryolith, a mineral containing *pure sodium*—insures a purity and uniformity of product which cannot be obtained from any other known material. In making BI-CARB. SODA from any other raw material, the use of sulphuric acid is a necessity, but none is used in any part of the process of making NATRONA BI-CARB.; hence its entire freedom from the slightest trace of arsenic, which is always present in ordinary soda. Its absolute purity and entire freedom from all traces of *sulphate of soda*, common salt and other impurities, render NATRONA BI-CARB. NEARLY TASTELESS, and being bolted through the finest bolting-cloth, insures the finest stage of division.

To these indisputable facts the attention of CONSUMERS of soda is specially called. They are IMPORTANT, and should influence both those who use and those who sell soda, to buy and sell NONE BUT THE BEST.

The NATRONA BI-CARB. Soda is kept in stock by almost every wholesale druggist and grocer throughout the United States, of whom it may be ordered.

Natrona Bi-Carb. Soda is unequaled by any other brand of English or American Manufacture.

PENNA. SALT MANUFACTURING CO.,
NATRONA CHEMICAL WORKS. PHILADELPHIA, PA.



ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,
184 Greenwich St., N.Y.

DO YOU KNOW THE **DANGER** OF USING SOAP?

IF YOU ARE GOING TO THE COUNTRY, DO NOT FAIL TO READ THE FOLLOWING.

WE do not mean soap made from proper material; and when we tell you that about ninety-nine per cent. of Toilet Soap is made from refuse fats gathered from tenement houses, hospitals, butcher shops, and from cattle dying of disease or during transportation, you will, we believe stop and think. Putrefactive changes have taken place in most of this material, as it is mixed with lean meat, blood, bones, sinews, etc. There is at least *one* soap that is made wholly from vegetable material—OLIVE and PALM OILS—and that is

VELVET SKIN SOAP.

It will keep the skin soft and in a healthy condition, as no animal fats are used in its manufacture.

Nothing in one's personal outfit is quite so satisfactory as a thoroughly reliable Toilet Soap.

We are confident that a trial of this article will insure its continued use. If the dealer does not keep it, do not take any other, but require him to order it for you, which he can do readily. **Otherwise, send to us direct.**

MANUFACTURED BY

REED & CARNRICK, Manufacturing Chemists,

447 GREENWICH STREET, NEW YORK.



A HIGH-GRADE PIANO

AT A VERY MODERATE PRICE.

NEW DESIGNS. FANCY WOODS.

Terms Easy. ✣ Monthly Instalments.

TWO, THREE AND FOUR PEDALS.

Catalogues, Prices, Terms, Etc., sent to any address.

EVERY PIANO WARRANTED 5 YEARS.

(Mention this Paper.)

THE LABORATORY.

To Inventors, Manufacturers and Applicants for Patents

The AMERICAN ANALYST may be consulted upon all matters involving theoretical or applied chemistry. Advice and opinions given. Analyses and assays made. Patents perfected and secured. Terms reasonable.

Address, AMERICAN ANALYST,
10 Park Place, N. Y.

SWIFT'S

CHOICE

Chicago Dressed Beef

AND

MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,

UNION STOCK YARDS,

CHICAGO, ILLS.

THE ORIGINAL AND GENUINE
(WORCESTERSHIRE SAUCE).



LEA & PERRINS' SAUCE

In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—

Lea & Perrins

Beware of Imitations; see that you get Lea & Perrins'

For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS, NEW YORK.

GLENN'S
SULPHUR SOAP.

Glenn's Sulphur Soap **is the Original and Best combination of its kind, and the one now generally in use. For sale by All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,

C. N. CRITTENTON,

115 FULTON STREET,

NEW YORK.

WHAT A DIME WILL DO!

Every BOY and GIRL who loves to read splendid Stories, Sketches and beautiful Poems, should subscribe for the AMERICAN YOUNG FOLKS, a beautiful Illustrated Monthly Magazine, established in 1875. Its stories are the Very Best that can be obtained from the Foremost Writers of Juvenile Literature, and every issue is filled with good things. The regular subscription price is $1.00 a year, but if you will **Cut this out** and return it to us with **a Silver Dime** and your name and address, we will send you the Magazine Six Months on Trial. Address,

AMERICAN YOUNG FOLKS, Manchester, N. H.

The Standard of Excellence.

KINGSFORD'S

OSWEGO

Pure and Silver Gloss



STARCH

KINGSFORD'S

OSWEGO CORN STARCH

FOR

Puddings, Custards, Blanc-Mange, Etc.

THE PERFECTION OF QUALITY.

WILL PLEASE YOU EVERY TIME.

Always ask your Grocer for these goods.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 39. NEW YORK, THURSDAY, SEPTEMBER 24, 1891. WHOLE No. 239

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - $1.00 per year.
Single Copies, - - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50
Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.
Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,
H. LASSING, M. D., } Editors.
T. P. McELRATH, }
No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

Bright Stories 460
The Snowstorm—*Concluded.*
The Quick-Boy Sand.
Character in Names 458
Domestic Dietetics 461
Editorials 457
Food Manufacturers' Association; Fashion and Bacteria; Honest Oleo.
Electricity and Life 458
Imitation Perfumes 459
Liqueurs 462
Stellar Diamonds 462
Telescopes 458

FOOD MANUFACTURERS' ASSOCIATION.

We have received a copy of the constitution and by-laws of the Food Manufacturers' Association of this city, and as the AMERICAN ANALYST, ever since its establishment seven years ago, has steadfastly maintained that pure food could and would drive out impure and adulterated food products, we look upon the project with considerable pride, and hope to see it crystalize into a permanent, strong and healthy movement in the right direction. It does not matter who organized this particular association, the grand idea was established and the original stimulus imparted to it by this journal. It is natural, therefore, that we should watch its growth with interest, and keep an outlook to see that it receives no harm from those who may succeed in identifying themselves with it from purely selfish motives. The statement in the preamble, of the objects of the association, seems to be a fair presentment of what it should be, and if those purposes are carried out as promised, they must result in great benefit to the honest manufacturer and in still greater benefit to the consumer. There are undoubtedly many difficulties in the way which will have to be overcome. We have already pointed out one of them. Another source of danger which we look upon with considerable apprehension is the presence in the management of at least two firms whose products can by no means be classed in the category of pure wholesome food. Is not their presence in that body a menace to the association? Is it due to a desire to so pull the wires as to give the impression to the public that their products also are pure and wholesome? Do they depend upon this kind of a bold bluff in the way of a reassuring inference by the public that if they knew their wares to be impure they would not dare to take the bold stand they apparently do for pure food? Will their presence in the board of management serve to keep out other manufacturers of concededly pure food products, who will not care to place pure unadulterated goods alongside of those known to be impure and adulterated. These are vital questions that cannot be ignored. A further source of danger is in the fact that while in some cases it is almost impossible for any one to draw a sharp clearly defined line between pure and impure goods, it must be especially difficult if manufacturers of impure goods have any voice in the settlement of the question. The object of enlightening and educating the public as to what really is wholesome, and of the desirability of using the best quality of food, is the most important of all. Whether this can be done by means of food exhibitions alone to any appreciable degree is very doubtful, because an exhibit of impure food can be made to look equally, if not more, attractive than the purest product, as we had occasion to demonstrate practically at the lamentable grocers' fair at the Lenox Lyceum last winter. Allowing the public to taste samples of foods may show what the public taste likes or dislikes, but it neither proves nor disproves anything as to purity. We have reason to believe that the officers of this association mean to do what is fair and honorable, and to carry out the true spirit of their undertaking. We shall closely watch every step that we may be able, as occasion offers, to point out to our readers every favorable advance made. We shall be just as quick to detect any attempt to humbug or throw sand in the public eye, but we sincerely hope that so commendable a movement will not be marred by any such disgraceful work. The honest food producers, who constitute the majority in the new organization, cannot afford to allow any selfish minority to make the tail wag the dog. We reproduce below the preamble to which we have referred, in order that our readers may appreciate the standard by which they are asked to measure the future actions of the association:

The objects of the Food Manufacturers' Association are to promote the manufacture, sale and consumption of wholesome food products, and to establish close and cordial relations between the manufacturer, distributor and consumer. To foster a friendly feeling between the various food manufacturers, and to gather and disseminate knowledge for their mutual benefit. To endeavor by every legitimate means to improve the quality of food, and to elevate and maintain a general standard of purity, wholesomeness and quality. To enlighten and educate the public by means of food expositions as to what really is wholesome, and of the importance of using the best quality of food.

FASHION AND BACTERIA.

According to the *Extra Blatt*, of Vienna, the police bureau of that city has recently issued a circular that strikes a heavy blow at the liberty of women. The fair Austrians have already protested against the circular; their foreign sisters, it is believed, will aid them in the crusade against its execution. "The high imperial and royal government," reads the circular, according to the papers, "has under consideration the question of the advisability of denying women the privilege of wearing trains to their dresses on the public streets. The federal sanitary council of Lower Austria has expressed the opinion that the wearing of such trains should be forbidden, as they raise the dust and thus aid in conveying the germs of infectious disease to the lungs. The practical execution of a measure forbidding the use of such trains, however, is coupled with many difficulties, as are all measures dealing with excesses in style. In accordance with the wishes of the imperial and royal government, the commissioners of police are requested to present their views upon the necessity and availability of such a measure." The *Extra Blatt* fails to inform us of the reports of the medico-Worths of the Viennese police. This is a matter that New York would do well to heed also. Any observant person walking in the vicinity of the large retail stores of this city during the afternoon hours, when the feminine "shopping" element is abroad in force, will speedily be convinced of the risk to health that must attend the street-sweeping scavenger work performed by the absurd long-trained dresses now in vogue. But when do mere considerations of health or hygiene regulate the fashion?

HONEST OLEO.

From the outset of the oleomargarine contest the AMERICAN ANALYST has steadfastly maintained the opinion that that commodity would ultimately vindicate itself as a cheap and wholesome substitute for butter, far preferable to a great mass of the vile stuff that is sold under that latter name. From a Washington despatch of September 14th, we are assured that the figures of the Internal Revenue Department, in regard to this year's product of oleomargarine, are going to surprise the dairymen throughout the country and others interested in the manufacture of artificial butter. Last year the receipts from the tax on oleomargarine were $786,291, as against $894,247 for the preceding year, a decrease of $107,000. This year there will be shown an increase of fully forty per cent.,

something wholly unexpected. The theory held by the officers of the bureau is that oleomargarine is steadily winning its way in public favor as an article of commerce put upon the market simply for what it is. They believe that people generally are beginning to recognize it as a cheap and healthful substitute for butter. It is noticeable from the returns that more oleomargarine is sold in the mining regions, distant from the markets, than anywhere else. This is because it "keeps," and does not become rancid as time goes by. Heretofore the output of oleomargarine has depended in a very great measure upon the grass crops. When these crops were good, and the cows consequently gave milk freely, the Government receipts on account of the tax upon oleomargarine, amounted to almost nothing. When the grass did not grow well, then there came a demand for oleomargarine. The unprecedented figures showing this year's increase from the tax on oleomargarine, would induce the belief that it has come to stay, grass or no grass.

ELECTRICITY AND LIFE.

IS ELECTRICITY SOMETHING MORE THAN A STIMULATING FORCE?

It seems to be a pretty well established fact that electricity may be made at least a powerful stimulant to the growth of plants. May it not be more than a mere stimulant? May it not be an actual creator of life? Beans, rye, corn, oats, barley, peas, potatoes, sunflowers, clover and flax, have all been experimented upon, in some cases with astonishing results. In one series of experiments the seeds were electrified before they were sown; in another, currents were maintained through the soil in which they were planted; and still another, through the atmosphere immediately above the plants. In several instances the yield of fruit was enormously above the average, and in all the growth was unusually luxuriant. Further experiments are in progress, and it is not unlikely that science is about to add another to her long series of beneficent triumphs, another refutation to the croaking philosophy of Malthus and his disciples. The results of the experiments have, furthermore, a suggestive bearing upon the relation between electricity and that inscrutable something which we call life. If they do not prove them the same, they at least bring them nearer together than any phenomena which have preceded them. When, in the healing art, enfeebled vitality is restored, either wholly or in part, by the skillful application of electricity, nothing is positively demonstrated beyond mere healthful stimulation, the mere awakening of life which already lay dormant in the system, such as might possibly have followed the use of other remedial agents But here it is not morbid restored to normal conditions, not dormant life reawakened to action. It is apparently the actual development of vitality not pre-existent in the perfectly healthy and normal organisms under treatment. Electricity itself, appears to be converted to vitality, as elsewhere it is converted to light, heat and mechanical motion. Whether life can thus not only be renewed, but actually transfused into the veins, or rather, the nerves of man, remains for physiological science to determine. It has already been shown that a living body is a species of thermo-electric battery, of which the ectoderm and the endoderm are the opposite poles; that the exhilarating effects of a cold plunge, for example, are due simply to the increase of potential from the reduced temperature of the "cold" electrode. But merely setting a battery into operation, or merely increasing its action, is not increasing its inherent voltage, which is what the recent experiments seem to have done for plants. But do not heat and the active principle of light artificially intensified produce similar effects? The forcing of vegetable growth in hot-houses is an old process and unlike the one in question, both in method and effect. According to the reports given, however, there is a very great difference in the results attained. If this be true, it would seem to indicate more strongly than ever that of all forms of natural force, electricity bears the closest relation to that mysterious form of it which we call life.—*N. A. Review.*

TELESCOPES.

THE HISTORY OF THEIR EARLY DEVELOPMENT.

Professor C. S. Hastins in a paper published by the *Siderial Messenger* of Northfield, Minn., says: Galileo learned in 1609 while visiting Venice, that a marvelous instrument had been invented the preceding year in Holland, which would enable an observer to see a distant object with the same distinctness as if it were only at a small fraction of its real distance. It required but little time for the greatest physicist of his age to master the problem thus suggested to his mind, and after he returned to Padua where he held the position of professor of mathematics in the famous university of that city, he set himself earnestly to work making telescopes. Such was his success that in August of the same year he sent to the Venetian Senate a more perfect instrument than they had been able to procure from Holland, and in January of the next year, by means of a telescope magnifying thirty times, he discovered the four satellites of Jupiter. This brilliant discovery was followed by that of the mountains of the moon; of the variable phases of Venus, which established the Copernican theory of the solar system as incontestable; and of the true nature of the milky way together with many others of less philosophical importance. Galileo did not change the character of the telescope as it was known to its discoverer in Holland, but he made it more perfect, and was the first to apply it to increase the bounds of human knowledge. Considering the enormous interest excited throughout intellectual Europe by the invention of the telescope, it seems surprising that its early history is so confused. Less than two years after it was first heard of, a discovery, perhaps the greatest in a thousand years in the domain of natural philosophy had been made by its means. Nevertheless, the three contemporary, or nearly contemporary, investigators assign the honor to three different persons. It seems to be well established now, however, that Franz Lippershey or Lippersheim, a spectacle maker at Middleburg was the real inventor of the telescope, and that Galileo's first telescope, avowedly suggested by news of the Hollander's achievement, was an independent invention, but based upon somewhat precise information, such as that the instrument consisted essentially of two lenses, of which one was a magnifying and the other a diminishing lens. That the discovery was really an accident we may be quite sure, for not only was there no developed theory of optics at the time, but even the law of refraction which lies at the basis of such theory was quite unknown. After Galileo had proved the existence of spots on the sun in 1611 no other discoveries of moment were made until over a generation. By the middle of the 17th century, however, several makers of lenses had so far improved the methods of grinding and polishing, that telescopes notably superior to that of Galileo were procurable. Among the makers were Auzont, who constructed a telescope 600 feet long (but no means was ever found for directing such an enormous telescope toward the heavens), and Huyghens, who won distinction for his discovery of the nature of Saturn's rings, with a telescope of his own invention. A few years later, the famous astronomer Cassini having come to Paris from Italy as Royal Astronomer commenced a series of brilliant discoveries with telescopes, which varied from 35 to 136 ft. long, made by Campani of Rome. Cassini's discovery of the third and fourth satellites of Saturn marks the furthest reach of the old form of telescope; a century was to elapse and an entirely new form of telescope was to be developed before any considerable addition was to be made to the stock of our knowledge of the aspect of the heavenly bodies. The older opticians had found that if they attempted to increase the diameter of a telescope they had to increase its length in a much more rapid ratio to secure distinct vision. Newton found the cause in what is now known as chromatic aberration, and convinced that this obstacle to further improvement in the refracting telescope was insuperable, he turned his attention to the construction of a reflecting telescope, and made one which had about the same power as Galileo's although little over six inches long. Even after Newton's invention was made public, little was done for the improvement of telescopes for half a century until Hadley presented a reflector of his own construction to the Royal Society, in 1723, which was found to be equal to the Huyghens refractor of 123 feet in length. A few years later Short commenced his career as a practical optician, and for thirty years he was unapproached in the excellence of his instruments; but telescopes were costly and discoveries unimportant. In 1766, a new star rose on the astronomical horizon in the person of William Herschel, the German organist of Octagon Chapel, Bath. He became profoundly interested in telescopy, and finding the cost of a satisfactory telescope beyond his means he determined to construct one for himself. Fortunately for science as well as for himself, he made, early in his career, a discovery of the very first importance, which attracted the attention of all Christendom. This was the discovery of Uranus, which led to his appointment as astronomer to the King, George III., with a salary sufficient to admit of his devoting his whole time to astronomy. We must go back now to a quarter of a century before Herschel discovered the new planet to notice another form of telescope which has remained unrivaled for the last half century in the more difficult fields of astronomical research. This is the achromatic telescope invented by Dolland. For a long time this ingenious invention remained fruitless for astronomical discovery on account of the difficulty of securing sufficiently large and perfect pieces of glass, more particularly of flint glass. This difficulty was finally solved by the Swiss watchmaker Gorinand, in concert with Frauenhofer, the optician, and they and their successors have so carefully preserved the secret of their success that all the large pieces of optical glass which have since been produced have been made by Gorinand's direct heirs. For a long time, Frauenhofer and his successors, Marz and Mahler, from whom the great telescopes of Pulkorva and of the Harvard Observatory were procured, remained unrivaled in this field of optics, but they have been followed by a number of skillful constructors in this country and in Europe whose products have, since the middle of the century, been scattered over the world.

CHARACTER IN NAMES.

THE SIGNIFICANCE OF NAMES IN NOVELS.

I suppose all novelists and story-tellers take some proper godfatherly or godmotherly care in the christening of their creatures. If they go no deeper, they at least observe the more superficial and obvious distinctions between character of bourgeois and gentle blood. They seek names appropriate to calling or locality, and so forth. Most take some pains about the naming of hero and heroine. One class of novelists appeals to a sentiment of romance, with high-sounding, historic names; another betrays the inevitable significance of nomenclature by scrupulously employing none but the most familiar. Nothing short of democratic training and Bostonian naturalism could have hardened Mr. Howell's heart into inflicting upon his Lady of the Arostook and her many admirers, for the sake of whatever dramatic point, the revolting surname Blood. Beautiful and picturesque names are no small element in the picturesque beauty of romance. Generations of

hearts have beaten time to the syllables Wilfred of Ivanhoe or Lucy of Lammermoor. The degradation of name is a bit brutal, even for parody, in the diverting "Rejected Address" which transforms—

"Charge, Chester, charge! On, Stanley, on!"
Were the last words of Marmion,

into

"'Od rot 'em,"
Were the last words of Higginbottom.

Thanks to what Matthew Arnold termed the touch of grossness in our race, we are bountifully provided with names of all shades of vulgarity and hideousness. With us no booby or villain, at all events, need go inappropriately named. It is unpardonable in fiction, however, to burden a charming girl with a vile name, and to make heroes of Higginbottoms is a mere wantonness of Zolaism. Art exists to console us for the hardships and anomalies of life. In the world of art there should be some subtle appropriateness in the naming of the *dramatis personæ*. What should be the nature of the appropriateness? What should be the secret of the affinity? Should novelists permit themselves to manufacture names with an obvious meaning, like Fielding's *Alworthy* for instance? Or, like Balzac, should they search for mystic meanings in real names? Can there possibly be any affinity, apart from the special associations of a book, between a mere meaningless proper name and a character? Chadband, Miss Miggs, Micawber, Pecksniff, Sairy Gam—were these names once absolutely non-significant? Surely, in the mere name of Micawber, there already lurk suggestions of a waiting for something to turn up. Enthusiasts have been known to protest that from Silas Wegg's bare name they divined the whole man, wooden leg and all. Not a bit of it, retorts rationalizing commonsense; make the experiment in a properly scientific spirit and see. Get a man innocent of Dickens to evolve from the letters of the word Pecksniff the character of the Salisbury architect, or from the data of a misshapen body and sly domestic cruelty, ask him to construct the name Quilp. Well, and suppose he fail, his failure is by no means fatal to the theory. Nature undoubtedly affords abundant instances of mysterious affinities between apparently heterogeneous things. Scents, sounds, and colors have infinite capacities of spiritual suggestion. Herein lies the secret of the potency of the sensuous arts. What analysis could exhaust the possible suggestiveness of names? There are forebodings in the mere sound of the syllables, and mysterious intimations in the mere look of the letters, which baffle all attempts at rational explanation. On this groundwork association has woven threads of suggestions, philological, historical, romantic. It is true that it is only after name and character have been joined together by the inspiration of the author that they cannot again be put assunder; but the marriage only reveals, and does not beget, the elective affinity. According as the element of allegory or the element of realism predominates in the artist's method, will be the wisdom or unwisdom of employing realistic or allegorical names. Where allegory predominates, as in "The Pilgrim's Progress," where our attention is directed, as in the motley crowd who people the English comic stage, chiefly to the skill of the dramatist in showing up the foibles of humanity, and winding mean and vicious actions into situations of laughable entanglement, then names which point the character and explain situations come naturally in place. Where, however, it is sought to stir pity and fear and sympathy with the sufferings and heroisms of men and women; where, as in tragedy, self-conscious observation of the writer's art should be lost in overwhelming feeling for the hero's destiny, then, so far I know, such names have never been adopted. Of names of this kind Shakespeare is sparing in the use. Justice Shallow, Slender, and Silence, with Fang and Snare, the Sheriff's officers—the majesty of the law always fares badly in the hands of satire; the constable, Dull; Froth, a foolish gentleman; Martext, a vicar; and that ragged regiment of Falstaff's recruits, Mouldy, Shadow, Wart, Feeble, and Bullcalf—these almost exhaust the list. It is not difficult to see with how much natural ease Dickens can introduce his Jingles and Veneerings. The art of Dickens is often the art of caricature, often it is the art of farce. His world is a grotesque, pathetic, lurid, ludicrous world of his own. He has brought together a teeming population of quacks and mountebanks, and waifs and strays, and monstrosities, for whom his most extravagant names are accepted as the only natural and proper ones. What shall we say, however, of Thackeray and his Deuceaces and Bareacres and the rest? His justification, if it be right to speak of justification, lies in this; that with all the solid reality of the life portrayed, we are never allowed to lose sight of the author and his art in portrai ure. He is ever at hand to underline the snobbery or laugh off the pathos. He is especially fond of putting on the airs and graces of the showman. His preface to "Vanity Fair" is headed, "Before the Curtain;" and this great novel of real life concludes with "Come, children, let us shut up the box and the puppets, for our play is played out.—*Edinburgh Magazine.*

IMITATION PERFUMES.

HOW CHEMISTRY CAN PRODUCE THE FRAGRANCE OF FRUIT AND OTHER ODORS.

Chemistry has found it possible not only to analyze perfumes, that is the ottos or essential oils, that would seem their final resting place, but to build up substances that have similar odors. Rum-ether, the substance to which rum owes its perfume, whose chemical name is too troublesome to give, is a regular article of commerce in Austria. It is made by taking 12 pounds each of sulphuric acid and black oxide of manganese, 26 pounds of alcohol and 10 of strong acetic acid. These ingredients are mixed and 12 pints distilled from them. Butyrate of pure ethyloxide possesses a delicate odor of pineapple, which by the addition of wine or potato spirits, may be altered to that of strawberry and raspberry. Nitric ether, 50 grammes; acetate of amyl and glycerine, 100 grammes each, with one litre of purest alcohol, will imitate the odor of pears, and more complicated compounds imitate the apple set. These are not like the perfumers' imitations—apt combinations of substances whose composition is unknown to him, but absolute buildings up of those subtlest of all things, odors from substances every one of which the chemist can control and make out of other known substances till the ultimate known elements are reached.

TABLE NONSENSE.—It is authoritatively announced that the employment of a piece of bread for assisting the fork in securing a savory morsel is now tabooed, and that he who thus pursues a slippery titbit around a slippery plate is no better than the man who eats peas with the aid of a spoon or cuts lettuce with a knife. Little by little, the satisfying of the appetite is turned into a feat of legerdemain, and the obtaining of food is now not so difficult a task as the enjoyment of it according to the rules of etiquette. Pleasure is thus mingled with anxiety. The bashful man often denies himself; and he envies the dog that secures his bone and, careless of remark, devours it naturally.—*Hotel Mail.*

COSTLY LIVING.—In Chile everything is wonderfully expensive but muscle, and that is of comparatively little value. A lady's bonnet costs from thirty to one hundred dollars; dress silk from six to twenty dollars the yard, and the modiste will charge you from thirty to fifty for making it. In Santiago, I paid twelve dollars the dozen for linen handkerchiefs, small size and ordinary quality, and eighteen dollars for a pair of button boots which at home would have cost about $4.50. I am informed that a gentleman's suit of common clothes cost from sixty to a hundred dollars; a pair of patent-leather shoes from $15 to $30; and a silk hat not less than $25. Breadstuffs are correspondingly high, and far beyond the reach of the poor rotos. —*Corr. Bost. Transcript.*

UNSEASONABLE HAPPINESS.—A new waitress in a certain family astonished the members thereof by bursting into song the first time that she waited upon them at dinner. When her mistress spoke to her about it she said, "Why, was I singing? Well, I often do when I feel happy."—*Boston Transcript.*

RAIN COERCER.—In all this talk about rain-making agencies, we are surprised at the way in which sunday-school picnics are ignored. An able-bodied sunday-school picnic in a nice grove about five miles from any shelter will bring rain quicker than any contraption that General Dryforthwith can invent. Not his name? Oh, well, it is near enough to go.—*Tribune.*

SMOKE SCREEN.—Through experiments made by English military authorities it has been found that whenever the atmosphere is laden with smoke or mist the power of an electric light is greatly diminished by crossing the beam of light by that of another at a certain angle. At the point of intersection the illuminated space is practically made a screen. It is proposed to utilize this knowledge, since the electric beam can thus be made to serve as a screen, back of which tactical operations might be conducted in secret.

DOMESTIC INSURANCE.—"The Integrity Mutual Beneficial Association" is the name of a sociey just organized in Philadelphia. The charter declares that its purpose is to "collect and accumulate a fund by admission fees, monthly dues and assessments, in order to benefit and aid its members in the event of their marriage, and to benefit its members upon their surviving a period of years, and to benefit and aid the widows and widowers and children of deceased members, and for the furtherance of the general welfare of the members thereof."

FIREPROOF PROCESS.—Still another process for fireproofing combustible materials is reported from Russia, the medium being described as paste, which is said to have been tested recently with most satisfactory results by the Moscow Imperial Society. A shanty was built entirely of straw, and, after being covered with the paste, was subjected to a hot fire, the only effect being to change the straw from a yellow to a reddish-brown color, without igniting or even cracking. The society referred to has consequently made arrangements, it is said, to introduce the use of this new invention throughout the empire, considering it from every point of view as of the highest value in villages or localities where the houses are, as a rule, thatched with straw, and where fires, once started, frequently make a clean sweep of the place. The cost of the preparation is very small.

ARTIFICIAL DYES.—Few instances of modern industrial growth in any one specialty are more surprising than that of the manufacture of artificial dyestuffs. In England, France, Germany, and some other countries, but especially in Germany, this industry has attained such prodigious growth that in some cases the extensive works resemble a small town or village. This appears from the published statistics of one of these plants—that of the Farbwerke, at Hoechst-on-Nain, where are employed some 1,900 workmen, 50 foremen, 9 engineers, besides 86 clerks and 57 chemists. The works cover an area of 726,000 square yards, and from one end of the works to the other the distance is 3,300 feet. Besides a great variety of dyestuffs, the acids employed in their production are also manufactured, amounting in one year to 23,108,000 kilograms of sulphuric acid, 12,800,000 of other acids, and 3,624,000 of coal tar products.

THE MOON'S SHAPE.—Referring to the fact that the photographs of the moon, taken at full, give that body an egg-shaped appearance, with the small end pointing toward the earth, a recent writer argues that this goes to prove that planet's non-globular shape, as was indeed to be expected. According to this writer's reasoning, matter at the surface of the moon is acted upon by two important forces—the law of gravity would arrange the matter in a globe around the centre, the moon alone considered, and the attraction of the earth, being always exerted in the same direction relative to the moon's centre, would constantly draw all fluid or plastic matter to the side next the earth; the sun shines not less than 325 hours consecutively on any given point on the moon's surface, and it is not probable that water on the surface would remain frozen under such continued sunshine, so that doubtless the fluid part of the moon's surface, obeying the constantly acting force that generates the tides on the earth, have long since gathered themselves together on that side of the moon nearest the earth. This idea, it is claimed, is not inconsistent with anything developed by the shadow of the moon in eclipses, not with any known fact.

BRIGHT STORIES.

THE SNOWSTORM.

From the Russian of Alexander Pushkin.

(Concluded from page 449.)

Meanwhile, the war had been brought to a glorious conclusion, and our armies were returning from abroad. The people ran to meet them. The music played by the regimental bands consisted of war songs, "Vive Henri-Quatre," Tyrolese waltzes and airs from Jaconde. Nourished on the atmosphere of winter, officers who had started on the campaign mere striplings returned grown men and covered with decorations. The soldiers conversed gayly among themselves, mingling German and French words every moment in the speech. A time never to be forgotten—a time of glory and delight! How quickly beat the Russian heart at the words "Native land!" How sweet the tears of meeting! With what unanimity did we combine feelings of national pride with love for the Tsar! And for him, what a moment!

The women—our Russian women—were splendid then. Their usual coldness disappeared. Their delight was really intoxicating when, meeting the conquerors, they cried "Hurrah!" and they threw up their caps in the air.

Who of the officers of that period does not own that to Russian women he was indebted for his best and most valued reward? During this brilliant period Maria was living with her mother in retirement, and neither of them saw how, in both capitals, the returning troops were welcomed. But in the districts and villages the general enthusiasm was, perhaps, even greater.

In these places the appearance of an officer became for him a veritable triumph. The accepted lover in plain clothes fared badly by his side.

We have already said that, in spite of her coldness, Maria was still, as before, surrounded by suitors. But all had to fall in the rear when there arrived at his castle the wounded young captain of Hussars—Bourmin by name—with the order of St. George in his button-hole, and an interesting pallor on his face. He was about 26. He had come on leave to his estates, which were close to Maria's villa. Maria paid him such attention as none of the others received. In his presence her habitual gloom disappeared. It could not be said that she flirted with him. But a poet, observing her behavior, might have asked, "S'amor non e, che dunque?"

Bourmin was really a very agreeable young man. He possessed just the kind of sense that pleased women; a sense of what is suitable and becoming. He had no affectation, and was carelessly satirical. His manner toward Maria was simple and easy. He seemed to be of a quiet and modest disposition; but rumor said that he had at one time been terribly wild. This, however, did not harm him in the opinion of Maria, who—like all young ladies—excused with pleasure vagaries which were the result of impulsiveness and daring.

But above all—more than his love-making, more than his pleasant talk, more than his interesting pallor, more even than his bandaged arm—the silence of the young Hussar excited her curiosity and her imagination. She could not help confessing to herself that he pleased her very much. Probably he too, with his acuteness and his experience, had seen that he interested her. How was it, then, that up to this moment she had not seen him at her feet; had not received from him any declaration whatever? And wherefore did she not encourage him with more attention, and according to circumstances, even with tenderness? Had she a secret of her own which would account for her behavior?

At last, Bourmin fell into such deep meditation, and his black eyes rested with such fire upon Maria, that the decisive moment seemed very near. The neighbors spoke of the marriage as an accomplished fact, and kind Praskovia rejoiced that her daughter had at last found for herself a worthy mate.

The lady was sitting alone once in the drawing room, laying out grande-patience, when Bourmin entered the room, and at once inquired for Maria.

"She is in the garden," replied the old lady; "go to her and I will wait for you here." Bourmin went and the old lady made the sign of the cross and thought, "Perhaps the affair will be settled to-day!"

Bourmin found Maria in the ivy-bower beside the pond, with a book in her hands, and wearing a white dress—a veritable heroine of romance. After the first inquiries, Maria purposely let the conversation drop; increasing by these means the mutual embarrassment, from which it was only possible to escape by means of a sudden and positive declaration.

It happens thus: Bourmin, feeling the awkwardness of his position, informed Maria that he had long sought an opportunity of opening his heart to her, and that he begged for a moment's attention. Maria closed the book and lowered her eyes, as a sign that she was listening.

"I love you," said Bourmin, "I love you. I have behaved imprudently, yielding, as I have done, to the seductive pleasure of seeing and hearing you daily." Maria recollected the first letter to St. Preux in "La Neuville Heloise." It is too late now to resist my fate. The remembrance of you, your dear incomparable image, must from to-day be at once the torment and the consolation of my existence. I have now a grave duty to perform, a terrible secret to disclose, which will place between us an insurmountable barrier."

"It has always existed," interrupted Maria; "I could never have been your wife."

"I know," he replied quickly; "I know that you once loved. But death and three years of mourning may have worked some change. Dear, kind Maria, do not try to deprive of me my last consolation; the idea that you might have consented to make me happy if—. Don't speak, for God's sake don't speak—you torture me. Yes, I know, I feel that you could have been mine, but—I am the most miserable of beings—I am already married!"

Maria looked at him in astonishment.

"I am married," continued Bourmin; "I have been married more than three years, and do not know who my wife is, or where she is, or whether I shall ever see her again."

"What are you saying?" exclaimed Maria; "how strange! Pray continue."

"In the beginning of 1812," said Bourmin, "I was hurrying on to Wilna, where my regiment was stationed. Arriving one evening late at a station, I ordered the horses to be got ready quickly, when suddenly a fearful snowstorm broke out. Both station master and drivers advised me wait till it was over. I listened to their advice, but an unaccountable restlessness took possession of me, just as though some one was pushing me on. Meanwhile the snowstorm did not abate. I could bear it no longer, and again ordered the horses and started in the midst of the storm. The driver took it into his head to drive along the river, which would shorten the distance by three miles. The banks were covered with snowdrifts; the driver missed the turning which would have brought us out on the road, and we turned up in an unknown place. The storm never ceased. I could discern a light, and told the driver to make for it. We entered a village, and found that the light proceeded from a wooden church. The church was open. Outside the railing stood several sledges, and people passing in and out through the porch

"'Here! here!' cried several voices. "I told the coachman to drive up."

"Where have you dawdled?" said some one to me. 'The bride has fainted; the priest does not know what to do. We were on the point of going back. Make haste and get out!'

"I got out of the sleigh in silence and stepped into the church, which was dimly lighted with two or three tapers. A girl was sitting in a dark corner on a bench; another girl was rubbing her temples. 'Thank God,' said the latter, 'you have come at last! You have nearly been the death of the young lady.'

"The old priest approached me, saying:

"'Shall I begin?'

"'Begin—begin, reverend father,' I replied, absently.

"The young lady was raised up. I thought her rather pretty. Oh, wild, unpardonable frivolity! I placed myself by her side at the altar. The priest hurried on.

"Three men and the maid supported the bride, and occupied themselves with her alone. We were married!

"'Kiss your wife,' said the priest.

"My wife turned her pale face toward me. I was going to kiss her, when she exclaimed, 'Oh! it is not he—not he!' and fell back insensible.

"The witnesses stared at me. I turned around and left the church without any attempt being made to stop me, threw myself into the sledge and cried 'Away!'

"What!" exclaimed Maria. "And you don't know what became of your unhappy wife?"

"I do not," replied Bourmin; neither do I know the name of the village where I was married, nor that of station from which I started. At that time I thought so little of my wicked joke that, on driving away from the church, I fell asleep, and never woke till early the next morning, after reaching the third station. The servant who was with me died during the campaign, so that I have now no hope of ever discovering the unhappy woman on whom I played such a cruel trick, and who is now so cruelly avenged."

"Great heavens!" cried Maria, seizing his hand. "Then it was you, and you do not recognize me?"

Bourmin turned pale, and threw himself at her feet.

THE QUICK-BOY SAND.

[*The events, which took place on November 23, 186–, are narrated by Reuben Cartwright, Esq., of Bleakirk Hall, Bleakirk-on-Sands, in the North Riding of Yorkshire.*]

A rough, unfrequented bridle-road, rising and dipping toward the coast, with here and there a glimpse of sea beyond the sad-colored moors; straight overhead, a red and wintry sun just struggling to assert itself; to right and left, a stretch of barren down still coated white with hoar-frost.

I had flung the reins upon my horse's neck, and was ambling homeward. Between me and Bleakirk lay seven good miles, and we had come far enough already on the chance of the sun's breaking through; but, as the morning wore on, so our prospect of hunting that day faded further from us. It was now high noon, and I had left the hunt half an hour ago, turned my face toward the coast, and lit a cigar to beguile the way. When a man is twenty-seven, he begins to miss the fun of shivering beside a frozen cover.

The run took a sudden plunge among the spurs of two converging hills. As I began to descend, the first gleam of sunshine burst from the dull heaven and played over the hoar-frost. I looked up and saw, on the slope of the hill to the right, a horseman, also descending.

At first glance, I took him for a brother sportsman who, too, had abandoned hope of a fox. But the second assured me of my mistake. The stranger wore a black suit of antique, clerical cut, a shovel hat and gaiters; his nag was the sorriest of ponies, with a shaggy coat of flaring yellow, and so low in the legs

that the broad flaps of its rider's coat all but trailed on the ground. A queerer turn-out I shall never see again, though I live to be a hundred.

He appeared not to notice me, but pricked leisurely down the slope, and I soon saw that, as our paths ran and at the pace we were going, we should meet at the foot of the descent, which we presently did.

"Ah, indeed!" said the stranger, reining in his pony, as though now for the first time aware of me; "I wish you a very good day, sir. We are well met."

He pulled off his hat with a fantastic politeness. For me, my astonishment grew as I regarded him more closely. A mass of lanky, white hair dropped on either side of a face, pale, pinched, and extraordinarily wrinkled; the clothes that wrapped his diminutive body were threadbare, greasy, and patched in all directions. Fifty years' wear could not have worsened them; and, indeed, from the whole aspect of the man, you might guess him a century old, were it not for the nimbleness of his gestures and his eyes, which were gray, alert, and keen as needles.

I acknowledged his salutation, as he ranged up beside me.

"Will my company, sir, offend you? By your coat I suspect your trade; *venatorem sapit*—hey?"

His voice exactly fitted his eyes. Both were sharp and charged with expression; yet both carried, also, a hint that their owner had lived long in privacy. Somehow they lacked touch.

"I am riding homeward," I answered.

"Hey? Where is that?"

The familiarity lay rather in the words than the manner, and I did not resent it.

"At Bleakirk."

His eyes had wandered for a moment to the road ahead; but now he turned abruptly and looked at me, as I thought, with some suspicion. He seemed about to speak, but restrained himself, fumbled in his waistcoat pocket, and, producing a massive snuff-box, offered me a pinch. On my declining, he helped himself copiously; and then, letting the reins hang loose upon his arm, fell to tapping the box.

"To me this form of the herb *nicotiana* commends itself by its cheapness; the sense is tickled, the purse consenting—like the complaisant husband in Juvenal; you take me? I am well acquainted with Bleakirk-*saper-sabulum*. By the way, how is Squire Cartwright, of the Hall?"

"If," said I, "you mean my father, Angus Cartwright, he is dead these twelve years."

"Hey?" cried the old gentleman, and added after a moment: "Ah, to be sure, time flies—*quo dives Tullus et*—Angus, eh? And yet a hearty man, to all seeming. So you are his son." He took another pinch. "It is very sustaining," he said.

"The snuff?"

"You have construed me, sir. Since I set out, just thirteen hours since, it has been my sole viaticum." As he spoke he put his hand nervously to his forehead and withdrew it.

"Then," thought I, "you must have started in the middle of the night," for it was now little past noon. But looking at his face I saw clearly that it was drawn and pinched with fasting. Whereupon I remembered my flask and sandwich-box, and pulling them out, assured him, with some apology for the offer, that they were at his service. His joy was childish. Again he whipped off his hat, and, clapping it to his heart, swore my conduct did honor to my dead father. "And with Angus Cartwright," said he, "kindness was intuitive. Being a habit, it outran reflection; and his whiskey, sir, was undeniable. Come, I have a fancy. Let us dismount, and, in heroic fashion, spread our feast upon the turf; or, if the hoar-frost deter you, see, here are bowlders, and a running brook to dilute our cups; and, by my life, a foot-bridge, to the rail of which we may tether our steeds."

Indeed, we had come to a hollow in the road, across which a tiny beck, now swollen with the rains, was chattering bravely. Falling in with my companion's humor, I dismounted, and, after his example, hitched my mare's rein over the rail. There was a raciness about the adventure that took my fancy. We chose two bowlders from a heap of lesser stones close beside the beck, and divided the sandwiches, for, though I protested I was not hungry, the old gentleman insisted on our sharing alike. And now, as the liquor warmed his heart and the sunshine smote upon his back, his eyes sparkled, and he launched on a flood of the gayest talk—yet always of a world that I felt was before my time. Indeed, as he rattled on, the feeling that this must be some Rip Van Winkle restored from a thirty years' sleep grew stronger and stronger upon me. He spoke of Bleakirk, and displayed a knowledge of it sufficiently thorough—intimate even; yet of the old friends for whom he inquired many names were unknown to me, many familiar only through their epitaphs in the windy cemetery above the cliff. Of the rest, the pretty girls he named were now grandmothers, the young men long since bent and rheumatic; the youngest well over fifty. This, however, seemed to depress him little. His eyes would sadden for a moment, then laugh again. "Well, well," he said, "wrinkles, bald heads, and the deafness of the tomb—we have our day notwithstanding. Pluck the bloom of it—hey? a commonplace of the poets."

"But, sir," I put in as politely as I might, "you have not yet told me with whom I have the pleasure of lunching."

"Gently, young sir." He waved his hand toward the encircling moors. "We have feasted *more Homerico*, and in Homer, you remember, the host allowed his guest fourteen days before asking that question. Permit me to delay the answer only till I have poured libation on the turf here. Ah! I perceive the whiskey is exhausted; but water shall suffice. May I trouble you—my joints are stiff—to fill your drinking cup from the brook at your feet?"

I took the cup from his hands and stooped over the water. As I did so, he leaped on me like a cat from behind. I felt a hideous blow on the nape of the neck; a jagged flame leaped up; the sunshine turned to blood—then to darkness. With hands spread out, I stumbled blindly forward and fell at full length into the beck.

(*Concluded next week.*)

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

September.

GAME AND POULTRY.—Pigeon, chicken, duck, woodcock.

MEATS.—Beef, mutton, lamb, veal, ham, kidneys, liver, venison.

FRUITS.—Apples, bananas, blackberries, gooseberries, huckleberries, grapes, melons, oranges, peaches, pears, pineapple, plums, raspberries, currants.

FISH.—Bass, blackfish, bluefish, clams, cod, crabs, eels, flounders, halibut, herrings, lobster, mackerel, mussels, porgie, prawn, rockfish, salmon, trout, sea-bass, sturgeon, turtle, white fish, whiting.

VEGETABLES.—Beets, beans, cabbage, carrots, cauliflower, corn, cucumbers, egg-plant, garlic, lettuce, onions, parsley, parsnips, potatoes, radishes, rhubarb, savoy, shallots, spinach, squash, tomatoes, turnips.

PRACTICAL RECIPES.

CREOLE POTATO SOUP.—Pare six fine potatoes and put them in the soup pot with a small onion and two stalks of celery cut in small pieces; pour on three pints of boiling water, cover the pot, and cook until the vegetables will easily mash through a seive. After mashing them return the puree to the soup pot and add salt, pepper, a table-spoonful of finely chopped parsley, a teaspoonful of butter, and half a cupful of cream. Boil up, pour into a tureen, and serve.

CURRIED KIDNEYS.—Let the kidneys stand overnight, or for several hours, in cold water in which there is a little vinegar. In the morning take them out of the water and parboil them. Cut them in dice or thin round slices, and add to them a raw potato and a small onion cut in the same shaped pieces; add boiling water enough to just cover them, put a cover over the saucepan and stew gently until the potatoes are tender; season with salt. Mix a teaspoonful of curry powder with a teaspoonful of butter and add it to the stew. Boil up and serve.

PUFFS.—Beat well together a cup of milk, a cup of flour, and a pinch of salt. Beat separately the whites and yolks of three eggs until they are very light; beat the yolks into the flour and milk, and, lastly, add the whites. Pour by spoonfuls into pattypans and bake a light brown. Eat with hard sauce flavored with brandy and nutmeg.

PEACH PRESERVES—Put your peaches into a pot of boiling water and let them stay in it about three minutes, but no longer. Take them out, peel off the skin, and throw them into a pan of very cold water. Take the pits out of a few of the peaches, crack them open, tie them up (shells and kernels together) in a thin cloth, to boil with the syrup. Weigh your fruit, if it is to be preserved whole as it is, then return the peaches to the cold water. If the stones are to be taken out before preserving, cut up the peaches before weighing and then let them stand in a covered dish. Make a syrup, allowing a pound of sugar to each three pounds of fruit, and two cups of water to every three pounds of sugar. Boil and skim, then add the peaches, a few at a time, boil them until clear, then put them into glass jars. When all are cooked let the syrup boil for ten minutes longer, fill up the jars with it, seal, and keep in a cool dark place. These preserves have a rather light syrup. A richer recipe is to skin and cut up the peaches, weigh them, add to them their weight in sugar, and let them stand a couple of hours, then boil down the mass until the peaches are clear; add a few kernels for flavoring. Pour into glasses, seal, and set away.

TONGUE TOAST.—Brown some thin slices of bread nicely on both sides, cut off the crust, butter the slices, and lay them neatly on a hot platter. With a coarse grater grate some boiled tongue over the toast, garnish with parsley, and serve for tea.

CRULLERS.—Rub one cupful of butter into four of flour, until it is quite fine; add a teaspoonful of baking powder, half a teaspoonful of salt, a teaspoonful of cinnamon, a grated nutmeg, and two cups of powdered sugar. Mix these up thoroughly with a knife; add flavoring of vanilla or rose water, and six well beaten eggs. Roll out an inch thick, cut into rings or fancy shapes, and cook a light brown in boiling lard. Turn them with a fork and knife. Take out of the fat with a perforated skimmer and drain for a moment, then dip them in powdered sugar.

SUBSTITUTE FOR LEATHER.—A German inventor has devised a new material which is intended as a substitute for leather in many of its uses. This material consists of panels of wood with wire netting between, the whole being glued together under heavy pressure. The sheets thus made are said to be very tough and pliable, and suited for making trunks, and other uses that require strength.

VELOCITY AND LIGHT.—A subscriber of the *Popular Science News*, inquiring what is the velocity of light, that journal replies: "As determined by Foucault, it is 185,157 miles a second. This determination is undoubtedly very nearly exact, although the mechanical difficulties in the way of measuring such an immense velocity render it difficult to obtain perfectly accurate figures."

STELLAR DIAMONDS.

A SUGGESTION AS TO THE METEORIC ORIGIN OF THE DIAMOND.

Of all the curiosities which the wise men of the Association for the Advancement of Science brought to Washington for exhibition to their fellows, the most extraordinary was a meteorite with diamonds in it. Such a thing had never been seen or heard of before; in fact, it was the only specimen of the kind thus far discovered in the world. The diamonds were little ones, but what they signified was big. The meteorite in question was one of many found recently in Arizona, near the Cañon Diablo. It was supposed by the discoverers that they had hit upon an iron mine of enormous value, but investigation proved that the great chunks of metal picked up had been shot out of the realms of space. The place whence they were obtained is known as the "Crater," because it looks like one; being a circular hollow one hundred feet in depth, three quarters of a mile wide, and surrounded by a wall of rock so steep that the bottom is strewn with the skeletons of animals which have got in and been unable to climb out again. Nevertheless, it is not of volcanic origin, as is proved with certainty by the fact that there is no lava, obsidian—volcanic glass—or other volcanic products in the neighborhood. What was it then that made the crater? Geologists say that it was formed by the impact of a single gigantic meteor, which at some time in the past struck the earth and burried itself out of sight, leaving a hole which has since become partly filled up, surrounded by a wall of rock that was forced out of place. Imagine what a big one it must have been to leave a cavity three-fourths of a mile in width where it hit this planet. The huge mass of iron of which it was composed is there yet, of course. Perhaps it is not sunk too deep to render mining for its material unprofitable. Fragments of it formed the masses that were picked up by the prospectors above referred to. That one which contained the diamonds, however, has opened an absorbing subject for speculation. It proves that there are diamonds in other worlds than ours; but also it points to many other important conclusions. The diamonds of the famous Kimberly mines, which at present produce almost the entire world's supply of these gems, are all found at the bottoms of just such craters as the one described in Arizona. It is believed that these craters, so called, were formed by the impact of great meteors, because there is no other conceivable way in which they could have been made, and for other reasons geological. If so, then it must be inferred that probably all the diamonds of the world were brought to this terrestrial sphere by meteorites. In other words, these precious jewels are not native to the earth, but have been fetched hither with the dust of other stars. That accounts for the manner, hitherto deemed unaccountable, in which they are scattered everywhere through drift of all sorts, having apparently no birthplace or definite relation to other minerals. Some scientists go so far as to assert that diamonds, like coal, which is so nearly of the same chemical constitution, could not possibly come into existence without previous vegetable growth to generate their material. For this reason they infer that the finding of the gems in the meteorite demonstrates that there must have been vegetable life, at all events, in the place whence the meteorite came. If there was vegetable life there, it is a fair presumption that there was animal life also. All this may be untrue, but it affords the first guess glimpse that has ever been obtained into the greatest problem that mankind has ever attempted to handle, namely, the question whether life exists in other worlds than ours. From the philosophical point of view, the fact cannot but be taken for granted in a universe in which the sun is merely an inferior star of the fourth magnitude. Nevertheless, some absolute evidence on the point would be extremely satisfactory. Meteorites ordinarily are nearly all iron, with a small percentage of nickel. None of them has ever been known to contain a particle of any precious metal. Nevertheless, many of them are worth many times their weight in gold, because of some peculiarity of structure or otherwise. Every collector of minerals makes it a matter of pride to have a specimen of every known kind of meteorite in his cabinet. If a new sort turns up and he has not a piece he is unhappy. It happens sometimes that one weighing not more than a pound, of a make-up that has not been seen before, will sell in bits for a couple of thousand dollars if its possessor knows how to dispose of it. People are not less interested in other worlds because they know nothing about the next one.

LIQUEURS.

SOME THAT CAN BE MADE AT HOME.

Home-made liqueurs, like home-made syrups, says a writer in the *Queen*, are easily manufactured, and always much appreciated. One of the most important points in their making is the final process, which in most cases consists in filtering the cordials, and the success of the operation largely depends on it being carefully performed; therefore, it is perhaps not unwise to mention it at once. It must be done either through a felt bag or through paper. In the first case, turn a wooden stool upside down and tie the bag to the feet of the same, and well over the centre of a glazed pan. In the latter case, take a sheet of filtering paper (unglazed), twist it funnel-wise, and put it into a metal funnel, to line it, so to speak; or tear up some papier-mache, soak it in water, cut it up again, dispose a layer of these damp shreds on a hair sieve, and filter the liqueur through this arrangement. In every case pour back the first strainings till the liquid becomes quite clear.

RATAFIA DE PECHES.—Put into an earthenware jar the broken stones (both parts) of three or four dozen peaches and add a pinch of powdered cochineal. Cover this with about three quarts of spirits, tie the jar down and infuse about twenty days. Strain and add to each one and a half pints of juice about three pints of clear syrup (30 deg.), filter, bottle and cork. Or, stone some small peaches, cut them up, and squeeze them in a cloth to express all their juice. To each one and a half pint of this allow three pints of spirits, add a stick of vanilla, and let it all infuse in jars for six weeks on a shelf or ledge outside somewhere where they can get all the sun possible. Strain and add a little less than one pound of syrup (30 deg.), filter, etc. Or, skin and halve half a dozen peaches, break the stones and blanch the kernels. Place these peaches in layers in large glass jars, cup-wise, and in every alternate half peach put one of the kernels. Sprinkle them once or twice during the stacking with a half-pound of sugar, leaving some for the top. Let them stand overnight, then add one and a half pints of pale brandy and half a pint of syrup. Tie down and leave for a month, then add one pint of spirits, and filter, when wanted, in the necessary quantity for the occasion.

NOYEAU.—Take a quart of pure brandy, six ounces of clarified syrup, one ounce of French prunes (beaten with a mallet to break the stones), the bruised kernels of peaches, nectarines or apricots (two ounces), some grains of celery seed, a few drops of essence of lemon or bitter almond. Infuse all this for ten days at least, and filter, having previously added half a pint of filtered water.

RATAFIA DE CASSIS (BLACK CURRANT).—Half fill a stoneware jar with the currants, add a handful of their own leaves, some cinnamon and cloves; fill the jar with spirits, cover or cork, and infuse for six weeks as above, strain, and stir in about half pint of syrup (30 degrees) to each pint of liqueur; filter, bottle and cork. Or mix and infuse, as above, only for a fortnight. Strain and boil the berries with some red wine and sugar, make a syrup with the first strained juice and some sugar, add to this the strainings of the berries just stewed with wine, boil the mixture till it has reduced a little, and bottle as soon as cold. This is not so fine as the first recipe as a liqueur, but it is excellent for colds and sore throats.

CHARTREUSE.—This requires the very best spirits and the finest essences. (Good kirchwasser may be used.) To a quart of spirits add twelve or fourteen drops of absinthe, four of cinnamon essence, four of essence of roses. Make a syrup with one pound of sugar and one quart of water. Skim it, boil again till it is a little thicker, and reduced by one-third, and when cool mix it with the spirits, etc. Filter and bottle.

HUILE, OR LIQUEUR AU CAFE.—To each pint and a half of spirits allow 125 coffee berries, moderately roasted. Make a syrup (30 degrees) with one pound of good Demerara sugar; put the coffee into this, let it boil up two or three times briskly, and with hardly any interval, and pour it into the spirits. Bottle the mixture (berries and all), cork, seal, let it stand for a month at least, then filter, etc.

GERM DISEASES AND DISEASE GERMS.

Many of the recent discoveries in microscopic pathology are as curious as they are interesting. Thus, for example, the germs which produce a disease in a human being may have no effect upon other species of animals. A cow will drink water with impunity that is full of scarlet fever germs, and will transfer these to its milk, so that the disease may be carried in this manner from a country town where the ailment is epidemic, to a city a hundred miles away. Parrots will carry the germs of yellow fever in their plumage, and canary birds and kittens those of diphtheria and croup for days at a time, and for long journeys. In fact, just as nature distributes the seeds of valuable plants, herbs and trees, by the aid of living creatures, so in the same manner she scatters broadcast the germs of countless microscopic beings, which, when they attack humanity, produce disease, suffering and death. Of greater value is the fact that the power of germs to do harm depends mainly upon the condition of the system which they attack. Upon a person in robust health they have no perceptible effect, or else if they gain a foothold, the resulting disease is so slight as to be barely recognizable. On the other hand, when the body is in bad shape, they gain a lodgement with the greatest ease and the ailment assumes serious proportions. When the organization is in what may be termed a typhoid state, the illness becomes virulent or malignant. The different classes may be illustrated by different forms of the same disorder: Summer complaint, colic, cholera morbus, dysentery and typhoid dysentery The first is a mere incident, unworthy of notice; the last is a dangerous and too often a fatal malady, while the intermediate stages are more or less perilous, according to the state of the sufferer. It is for this reason that people who are scrofulous, debilitated, or anemic, suffer so much more when sick than those who are strong. The system is in a weak, and it may be a morbid condition, and the microbes multiply and thrive until nearly every tissue is affected. Persons of this type die off like sheep in the shambles, where vigorous men and women recover in a few hours. To render the system proof against these insidious seeds of sickness and death, it must be cleansed within thoroughly and the vital organs must be strengthened and made normal in action. This is a simple but gradual task. The skin must be kept so clean as to give the pores full scope; enough exercise must be taken daily to keep the joints and muscles in proper order and the appetite and digestion up to the mark. Then, and most important of all, the individual should use Ayer's Sarsaparilla until the blood is pure and the great physical functions are acting naturally. This is readily

determined at a glance. When the whites of the eye are clear, the complexion good, the tongue free from coating, and a spirit of buoyancy prevails, the system is then in good running order. Until then, the Sarsaparilla should be employed with the greatest regularity and care. Without these precautions, any one is liable to be stricken down with some germ disease at a moment's notice. With them, the germs find no foothold in the body, and the diseases they produce remain unknown. Judiciously used, Ayer's Sarsaparilla is the best known preventive of all these terrible ailments.

BUSINESS NOTES.

A RISING WESTERN CITY.

WATERTOWN, S. D., Aug. 20, 1891.—Here I am on the shores of Lake Kampeska, where the Indians claim that Gitche Maniton, the "Great Spirit," has addressed the Sioux Indians for many ages. This is said to be the most beautiful lake in the country—an inland ocean of fairy charms. The lake is fed by artesian springs from subterranean seas. Beginning on the northern shore of this lake, and running in the shape of a V, is the great Sisseton reservation, the lingering home of the Sisseton and Wampeton Indians, and comprising 3,000,000 acres of the choicest and richest blue grass land in the known world. This reservation will be opened to settlers within the next sixty days and it is safe to say that within the next six months thousands of families will have secured homes at settlers' prices, which in three years' time will be worth from $50 to $100 per acre, and which will yield every year the value of the farm in the rich products of the Northwest. The government agent is now paying the Indians for this land, and thousands of men, women and children are gathering on the border, waiting to cross over into the promised land. In this great Sioux Valley, crops never fail; here they have never known a drought. The average yield brings the farmer nearly the value of his land every year, and this is something which can be said of but few locations in the world. The old chief of the Dacotahs said, in addressing his braves, a few days ago: "Brave Dacotahs can no longer hope to hold beloved Kampeska." At the south point of this reservation, in Lake Kampeska is a huge rock known as "Prophet Rock." There has been from the birth of time among these Indians a legend that, so long as this rock remained above the water so long would the Indians retain the land, but that when it should sink beneath the waves the white man would possess it and hold sway." Strange as it may seem, this rock has been gradually sinking for the past ten years, and now as this reservation is being opened up by settlers and the Indians' title is being extinguished, this rock has sunk beneath the water.

"Sing, O, Song of Hiawatha,
Of the happy days that followed
In the land of the Dakotas,
In the pleasant land and peaceful,
Sing the mysteries of Mondamin,
Sing the blessings of the Cornfield,
Buried is the bloody hatred,
Buried is the dreaded war club,
And the war cry is forgotten.
There is peace among the nations."

These are the waters of which Longfellow wrote, Mrs. Sigourney poetized and Nilsson sung her sweetest song:

"Fascinating Lake of the heavens,
Waves of the setting sun,
Springs from an internal ocean
Whither go you and from whence did you come."

Lake and country of poet and poetess, singer and songstress soon to be a valley fit for gods. On the shores of Kampeska a city is arising as by magic. Twelve years ago not a white man within 125 miles of Kampeska; to-day, in a rich and prosperous agricultural valley of the richest land in the West, and on the shores of this lake, is Watertown, a city of 6,000 inhabitants, and a better built city than I have ever seen in the East of three times its size. As a manufacturing city Watertown is destined to rival Minneapolis and Omaha in a very few years. It is in the centre of the richest farming country of the West, a country which has made thousands of farmers wealthy in one year. A professor of the State University, writing to a Detroit paper a short time ago, said: "I am standing on the porch of the house of an old friend who left Michigan five years ago for Watertown, S. D. He arrived in this country with a team of horses, six children, and less than $100 in money. To-day he owns 1200 acres of the richest and most beautiful land man's eyes ever rested upon. He doesn't owe a dollar, his land is worth $60 to $70 per acre, he has in his granary 8000 bushels of last year's wheat, will harvest this year 17,000 bushels more, and his fields are covered with the finest stock. From where I am sitting I can see half a dozen other farmers as prosperous as he. In this country the farmer is monarch, the toiler of the soil, is king." Recently a syndicate was formed composed mostly of eastern men (though several prominent western men are interested in it), called "The Watertown Land and Improvement Company." Its officers are in this city, and in the Equitable building, Boston, Mass. This Company purchased in June last nearly half of the city of Watertown, and several thousand acres adjoining land, and control the shores of Lake Kampeska and Lake Pelican. This company offers every inducement to manufacturers to come to what promises to be a second Chicago. Five railroads are said to be in the deal. Several of the car shops are coming here and nearly a dozen factories have been arranged for. Books, maps and charts of Watertown and the Sioux valley are furnished upon application at the Company's office in Boston. They have already aided numerous farmers in getting homes in this richest of all lands. Their plan is to make Watertown, at the earliest possible day, a city second to none in the Northwest.

Buffalo Lithia Water, Spring No. 2, in Bright's Disease, Gout, Stone in the Bladder, and Diseases Generally of Uric Acid Diathesis, Etc., Etc.

DR. WM. A. HAMMOND, of Washington, D. C., Surgeon General U. S. Army (retired), Professor of Diseases of the Mind and Nervous System in the University of New York, etc.

"I have for some time made use of the BUFFALO LITHIA WATER in cases of AFFECTIONS of the NERVOUS SYSTEM, complicated with BRIGHT'S DISEASE OF THE KIDNEYS or with a GOUTY DIATHESIS. *The results have been eminently satisfactory.* Lithia has for many years *been a favorite with me in like cases, but the* BUFFALO WATER CERTAINLY ACTS BETTER THAN ANY EXTEMPORANEOUS SOLUTION of THE LITHIA SALTS, and is, moreover, better borne by the stomach. I also often prescribe it in those cases of CEREBRAL HYPERÆMIA resulting from OVER MENTAL WORK—in which the condition called NERVOUS DYSPEPSIA exists—*and generally with* MARKED BENEFIT."

DR. WM. B. TOWLES, Professor of Anatomy and Materia Medica, in the Medical Department of the University of Virginia.

"BUFFALO LITHIA SPRINGS, No. 2, belongs to the ALKALINE or, *perhaps, to the* ALKALINE SALINE Class, *for it has proved far more efficacious in many diseased conditions than any of the simple* ALKALINE waters.

"*I feel no hesitancy whatever in saying that in* GOUT, RHEUMATIC GOUT, RHEUMATISM, STONE *in the* BLADDER, and in all diseases of URIC ACID DIATHESIS, *I know of no remedy at all comparable to it.*

"*Its effects are marked in causing a disappearance of* ALBUMEN *from the urine. In a* single case of BRIGHT'S DISEASE *of the* KIDNEYS, I witnessed *decided beneficial results from its use, and from its action in this case I should have great confidence in it as a remedy in certain stages of this disease.* In DYSPEPSIA, especially that form of it in which there *is an excessive production of* ACID *during the process of nutrition*, in some of the PECULIAR AFFECTIONS *of* WOMEN, notably in SUPPRESSION of the MENSES, and in CHRONIC MALARIAL POISONING, etc., I have found it highly efficacious."

DR. G. HALSTEAD BOYLAND, late Professor of Surgery, Baltimore Medical College, late Surgeon French Army (Decorated), Member Baltimore Academy of Medicine, Member of American Medical Association.

"In BRIGHT'S DISEASE of the KIDNEYS, ACUTE or CHRONIC, BUFFALO LITHIA WATER, Spring No. 2, is, in my experience, *without a rival*, whether in the PARENCHYMATOUS form or INTERSTITIAL NEPHRITIS. In cases in which the ALBUMEN in the URINE reached as high as 50 per cent., I have known it under a course of this water gradually diminish and finally disappear, at the same time other alarming symptoms were relieved and the sufferers restored to health.

"In STONE in the BLADDER of the RED LITHIC ACID and the WHITE PHOSPHATIC DEPOSIT, the SOLVENT power of this water is *unmistakable*."

Water in cases of one dozen half gallon bottles, $5.00 f. o. b. here.

THOS. F. GOODE, Proprietor, BUFFALO LITHIA SPRINGS, VA.

WELL SPREAD.—A pound of phosphorus is sufficient to tip 1,000,000 matches.

ROSE LEAVES.—It requires about 3,000 pounds of rose leaves to produce an ounce of atter of roses.

LA GRIPPE.—The name "grippe" is supposed to be derived from the Polish word "chrypka," meaning catarrh.

YANKEE INGENUITY.—Connecticut last year took out more patents in proporton to population than any other State in the Union.

EARLIEST MILL.—It is said that the first mill to be operated by water power was invented by Mithriadates, king of Cappadocia, about the year 70 B. C

NEW CLAWS.—It is a fact not generally known that lobsters and several other crustaceans will renew a claw should one be lost in fighting or by accident

SUN LORE.—The sun is so large that, although its distance from us is nearly 93,000,000 miles, yet only a little more than 100 suns laid in a row, touching one another, would reach the earth,

NEW COMPOUND.—A German scientist has discovered a curious gaseous compound, made up of oxygen and hydrogen. It dissolves metals, and with silver and mercury it forms powerful explosives.

ORIGINAL. No. 46.

Breakfast Vanities

BY MRS. DEARBORN,

Principal Boston Cooking School.

Mix and sift together 1 pint pastry flour, ½ tea sp. salt and 1 heaping tea sp. Cleveland's Baking Powder. Mix to a stiff dough with milk, using only sufficient to make it stiff enough to roll.

Toss out on a slightly floured board, roll out very thin, cut into small squares with a sharp knife or pastry wheel and drop into boiling lard.

Shake the kettle gently to facilitate their rising, and when well puffed up turn them and brown the other side. Drain on paper. They should be cooked in fat hot enough to brown a piece of bread while counting sixty, and are quite hollow when cooked. Serve with maple syrup if liked.—(Copyright, 1891.)

Use only Cleveland's baking powder, the proportions are made for that.



Pure crystal cream of tartar and soda make a perfectly wholesome leaven. There is no other leavening power in Cleveland's Baking Powder.

Fine Table Wines

From our Celebrated Orleans Vineyard.

Arpad Haraszthy & Co.

Producers of the

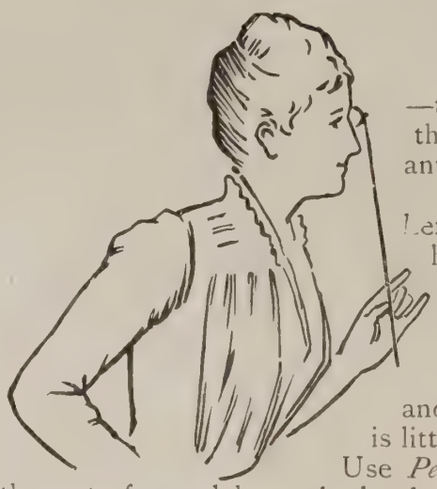
ECLIPSE CHAMPAGNE,

530 Washington St.

SAN FRANCISCO.

GENERAL AGENCIES:

NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOSEPH R. PEEBLES' SONS CO., 73 West Fourth Street
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Av.
HONOLULU, H. I.: HAMILTON JOHNSTON.



Short-sighted

—the woman who doesn't use *Pearline;* the woman who fails to have her servants use *Pearline.*

She fails to see what is good for her; she fails to have what is best for her.

Without *Pearline*, washing and cleaning is drudgery and toil, and wear and tear, and rub, rub, rub.

With it, there is no hard work, and no harm to the finest things; there is little or no rubbing.

Use *Pearline*, and rest from your labor; the rest of your labor—the hardest part—is done by *Pearline.*

Fore-sight

The woman has fore-sight who refuses the imitations of Pearline offered by peddlers and unscrupulous grocers, which they claim to be "same as Pearline," or "as good as Pearline." IT'S FALSE—besides, Pearline is never peddled

243 JAMES PYLE, New York.

COPPERED IRON.—A process has been recently invented by which iron may be coppered by dipping it into melted copper, the surface of the iron being protected by a layer of melted cryolite and phosphoric acid. It has been found that if the article, when immersed, is connected with the negative pole of a battery, the coppering is done more rapidly.

MAGNETIC CONCENTRATOR.—A new ore concentrator has been devised, which operates by crushing the material to about a quarter of an inch in size, and which, exposed to the action of powerful magnets, separates the particles of iron ore. The particles of ore are again crushed to a finer state, and again exposed to magnetic action, resulting in a concentrated condition of the iron.

SIMPLE ENGINE.—For users of steam power, who are not skilled mechanics or not accustomed to run engines, a unique type of engine construction has, says the *Safety Valve*, lately come into vogue, consisting of a moving steam cylinder and moving valve, and a stationary steam chest, thus dispensing entirely with various mechanical arrangements, commonly employed, such as the eccentric valve rod, complicated connecting rods, slides, rockers, etc.

SUN BURST.—A luminous outburst of the sun was observed by the French astronomers on the 17th of June. First appeared a luminous spot of a yellow golden tinge, soon followed by another just above it. The spectroscope showed the first spot to consist of a central eruption, from which volcanic bombs were thrown to heights above the chromosphere, where they seemed to rest as dazzling balls. A few minutes later these were replaced by brilliant jets or filaments.

MAMMOTH FLAG.—On Friday, Septemper 11th, the Overman Wheel Co., Chicopee Falls, Mass., flung to the breeze one of the largest United States' flags ever made (and possibly the largest), the dimensions being 41x71 feet. This monster flag was stretched from the top of two five story factories, and gathered within the folds were numerous flowers which fell into the crowd below when unfurled. The Mayor of Chicopee, the Overman Wheel Co. Band, and a large concourse of spectators witnessed the event. The flag is without advertising of any kind, being merely a national flag.

SKY COLOR VARIATIONS.—An interesting paper detailing observations on the variation of the intensity of the blueness of the sky was recently read before the Academie des Sciences, Paris. The observations were made at Montpelier, France, and may be summarized as follows: The sky is bluest in the months of December, January, March and September and least blue in February, July, August and November. Speaking in general terms the sky is deepest blue in Winter, palest blue in Summer and of intermediate depth of color in Spring and Autumn. With regard to each day, the sky is bluest in the morning and palest during the hottest hours. Toward evening the blue intensifies again, but does not equal that of the morning.



Armour's

Extract of BEEF.

The best and most economical "Stock" for Soups, Etc.

One pound equals forty-five pounds of prime lean Beef.

Send to us for our book of receipts, showing use of ARMOUR'S EXTRACT in Soups and Sauces.

ARMOUR & CO., Chicago.

CONFEDERATE MONEY.

Warranted Genuine and in Good Condition.

We are extensive dealers in Confederate Money—rare relics of our late civil war; also Bullets, Cannon Balls, etc. We want agents in every city North to sell these mementoes, and we will pay agents handsomely to sell our goods. We will furnish the money to those desiring at the following retail prices: Shinplasters, 10, 25, 50 and 75 cents each, or the entire set 50 cents. Complete sets, consisting of $100, $50, $20, $10, $5, $2, $1, 50c., $1 per set. $500 bills, $2.50 each. $100 bills, 15 cents, or two for 25 cents. $50 bills, 10 cents, or two for 15 cents. $5 and $20, 5 cents each. 50c., $1 and $2, 25 cents each. Inquirers enclose stamp for reply.

Publishers of SOUTHERN AGENT, Atlanta, Ga.

LITTLE BOYS AND GIRLS

MAKE EASILY $2 A DAY.

Write for particulars. Address

BARKER PUBLISHING COMPANY, Atlanta, Ga.

$5, $10 and $20

CONFEDERATE BILLS,

only five cents each. AGENTS WANTED.

SOUTHERN STAR, Atlanta, Ga.

A FORTUNE IN A FORTNIGHT!

Can't be expected, but thousands are making good livings from our FAMOUS TRADE SECRETS; Nearly 3000 GUARANTEED receipts of every business sent for $1.00. List and particulars free.

Box 441. **EUREKA PUBLISHING CO., Chicago, Ill**

HAY FEVER

For the cause, (Not Cure), which is **preventable. Sufferers only** address

THEODORE RUE, Box 199, BEVERLY, N. J.



THE ORIGINAL AND GENUINE
(WORCESTERSHIRE SAUCE).



LEA & PERRINS' SAUCE

In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—

Beware of Imitations; see that you get Lea & Perrins'

Lea & Perrins

For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS. NEW YORK.

RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,
184 Greenwich St., N. Y



We can save you Fifty Dollars when you Build. See



A complete set of Plans to build from, simply state about price of dwelling desired. 25 cts. in stamps. Our book "Beautiful Homes." 25 cts. Our monthly book "The National Builder," 25 cts. Address

The National Builder, Adams Exp. Bldg., Chicago, Ill.

GOITRE, or THICK NECK.

I have a positive, speedy, cleanly, harmless and almost inexpensive cure. Come or write to me at 28 Arlington Court, CLEVELAND, Ohio. It is no iodine smear. Cure made permanent.

Dr. J. CASKEY.

SWIFT'S

CHOICE

Chicago Dressed Beef

AND

MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,

UNION STOCK YARDS,

CHICAGO, ILLS.

TABASCO PEPPER SAUCE,

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced by connoisseurs to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY'S SON,

NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

THE

New Model "HALL"



A Perfect Typewriter. Best Manifolder. Terms to Agents Liberal. Portable. Inexpensive. Writes All Languages. *Read Mr. Howell's Opinion.*

"I wish to express my very great satisfaction with the Hall typewriter. Impressions and alignment are both more perfect than any typewriter that I know, and it is simply a pleasure to use it. It is delightfully simple and manageable."

(Signed) W. D. HOWELLS.

Send for Catalogue and Specimens of work.

Address N. TYPEWRITER CO., 10 Temple Pl., BOSTON.

DETECTIVE!

WE WANT A MAN IN every **locality** to act as **Private Detective** under our instructions. Send stamp for particulars.

WASHINGTON DETECTIVE AGENCY, Box 787. Washington, Iowa.

HARTSHORN'S SELF-ACTING SHADE ROLLERS

NOTICE SCRIPT NAME OF Stewart Hartshorn ON LABEL, AND GET THE GENUINE

HARTSHORN



A HIGH-GRADE PIANO

AT A VERY MODERATE PRICE.

NEW DESIGNS. FANCY WOODS.

Terms Easy. + Monthly Instalments.

TWO, THREE AND FOUR PEDALS.

Catalogues, Prices, Terms, Etc., sent to any address.

EVERY PIANO WARRANTED 5 YEARS.

(Mention this Paper.)

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,

HOWARD STREET, BOSTON, MASS.

GOLD MEDAL, PARIS 18[illegible]



W. BAKER & Co.'s Breakfast Cocoa

from which the excess of oil has been removed,

Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

"BILLET"

are

Carefully Selected French Sardines, Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS.

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

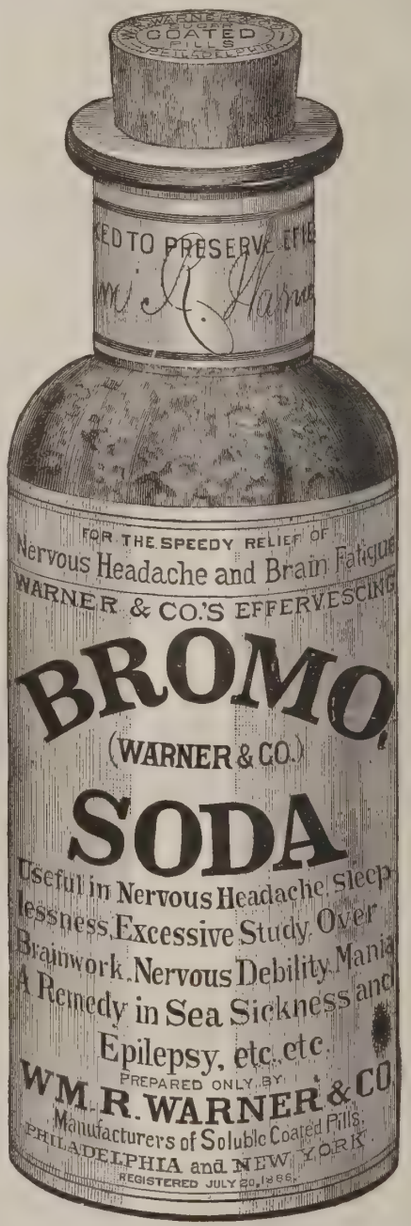
FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

BROMO SODA.

Useful in Nervous Headache, Sleeplessness, Excessive Study, Over Brainwork, Nervous Debility, Mania, Etc.

DOSE—A heaping teaspoonful in half a glass of water, to be repeated once after an interval of thirty minutes, if necessary. Each teaspoonful contains 30 grs. BROMIDE SODIUM and 1 gr. CAFFEIN.



SUPPLIED BY ALL DRUGGISTS

Ask for (Bromo-Soda, Warner & Co.) and take no other "Bromo."

Pure LAGER BEER,

"IMPERIAL" and "CULMBACHER"

Brewed & Bottled SPECIALLY FOR HOTELS, CLUBS AND PRIVATE FAMILIES

BY

Beadleston & Woerz

291 W. 10th St. New York.

Orders by Postal Card promptly attended to.

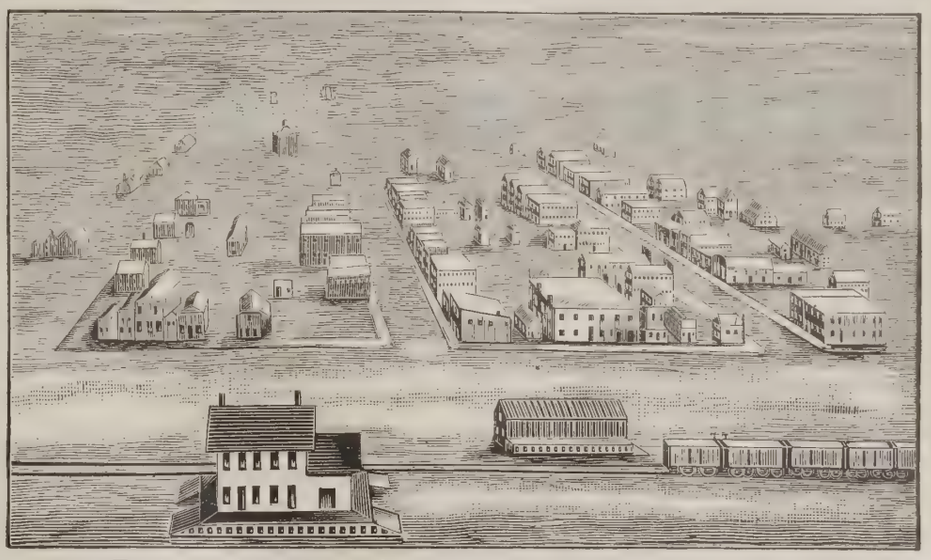
WATERTOWN, SOUTH DAKOTA.

THE MARVELLOUS RESULTS which have been accomplished in the rearing of cities and towns upon the fertile plains of South Dakota, seem, at times, to overreach the imagination of the most visionary mind. Those who are accustomed to the vim, the pluck, the shrewdness, and the far-reaching plans of the Westerner, are sometimes found meditating in wonder at the rapid development on every side of them, while men more accustomed to Eastern environments and ideas, and to less rapid progress, look in awe and amazement at the work of hardly a decade.

Ten years ago, where now stands the city of WATERTOWN, there was nothing to obstruct the vision from a great ocean of rolling prairie in one direction, from the winding and fertile Sioux Valley in another, or from the rivers and lakes on the west; there was not the sign of a tree in sight, save those which skirted the borders of Lake Kampeska, and one could count on the fingers of one hand the white men then here.

IN 1884,

WATERTOWN consisted of a straggling little town of 50 or 60 buildings of which the following is a bird's eye view.



To-day a city of Brick, Stone and Granite, with 6,000 Souls,

eight lines of railway, miles and miles of graded streets and sidewalks, shade trees, numerous manufacturing plants, water works, street-car lines, electric lights, five-story hotels, opera houses, churches, schools, financial exchanges, jobbing and mercantile interests, parks and boulevards neat, cosey, and comfortable homes; a city whose corporate limits extend over an area of four sq. miles, which is but poorly illustrated below.

WATERTOWN IN 1891.



With unsurpassed R. R. facilities for business (8 lines now entering there and 2 more already projected) and most delightful residence sites especially cheap and available; adapted to suit the tastes of either rich or poor, it offers inducements to Business Men, Manufacturers, Capitalists and Home Seekers, seldom found. Its Educational advantages are first-class as can be judged from the view below of the

NEW HIGH SCHOOL BUILDING.



In a future issue we shall offer further proof of its growth, by views of some of its Public Buildings, and also show the

MARVELLOUS AGRICULTURAL AND MINERAL RESOURCES

of SOUTH DAKOTA, and the value of WATERTOWN as a **Market and Distributing Centre** for manufactured goods as well as agricultural products. MAPS AND ILLUSTRATED PAMPHLETS giving full statistical details, and describing the lands for sale adapted for Residences, Business, Manufacturing or Agricultural purposes, sent **Free to any Address.** Apply at the offices of the

WATERTOWN LAND AND IMPROVEMENT CO., EQUITABLE BUILDING, BOSTON, MASS.

BLAIR'S PILLS.



Great English Remedy for GOUT, RHEUMATISM and KIDNEY COMPLAINTS.

SURE, PROMPT and EFFECTIVE.

Large Box, 34; Small, 14 Pills.

At all Druggists, and

224 WILLIAM STREET, NEW YORK.

HAMMOND'S

CELEBRATED

Calumet Oleomargarine

Strictly pure, cheap and healthful.

Ask your grocer for it.

Put up in packages of all sizes, also prints and rolls.

C. H. HAMMOND CO.,

607 to 615 THE ROOKERY,

CHICAGO.

Also offices at Boston, South Omaha, Neb., and Hammond, Ind.

DO YOU KNOW THE **DANGER** OF USING SOAP?

We do not mean soap made from proper material; and when we tell you that about ninety-nine per cent. of Toilet Soap is made from refuse fats gathered from tenement houses, hospitals, butcher shops, and from cattle dying of disease or during transportation, you will, we believe stop and think. Putrefactive changes have taken place in most of this material, as it is mixed with lean meat, blood, bones, sinews, etc. There is at least *one* soap that is made wholly from vegetable material—OLIVE and PALM OILS—and that is

VELVET SKIN SOAP.

It will keep the skin soft and in a healthy condition, as no animal fats are used in its manufacture. Nothing in one's personal outfit is quite so satisfactory as a thoroughly reliable Toilet Soap. We are confident that a trial of this article will insure its continued use. If the dealer does not keep it, do not take any other, but require him to order it for you, which he can do readily. **Otherwise, send to us direct.**

MANUFACTURED BY

REED & CARNRICK, Manufacturing Chemists,

447 GREENWICH STREET, NEW YORK.

GLENN'S **SULPHUR SOAP.**

Glenn's Sulphur Soap is the **Original and Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,

C. N. CRITTENTON,

115 FULTON STREET,

NEW YORK.

THE QUEEN'S PRIZE SCHOOL OF HISTORY.

About two years ago the publishers of THE CANADIAN QUEEN added what has proven to be a very popular and successful feature to their publication in establishing their Prize History School. It has offered competitive examinations in English, Canadian and American History, giving valuable rewards to those making the most correct answers. During this time there have been added the names of over forty thousand new subscribers to their books. Rewards have been made by THE QUEEN which have cost them in cash over ten thousand dollars. THE QUEEN'S Prize School of History has received the sanction and support of the clergy, press, and, in fact, of the best people of the Dominion of Canada. The following, taken from a leading daily newspaper, expresses an opinion which is universal:

A HANDSOME PRIZE.

AN EVIDENCE OF WHAT A GENUINE MAGAZINE COMPETITION OFFERS.

"On Friday there arrived from Toronto, for Miss M. Hora, a handsome Shetland pony, harness and cart, being the first award in the Royal Quilt Competition of THE CANADIAN QUEEN magazine. It attests the genuine nature of the magazine's contests by its excellent condition and value. THE QUEEN has frequent competitions and has made innumerable awards, displaying a generosity quite surprising to those who have had experience of the limited field for Canadian journalistic enterprise. But THE QUEEN has been a success as a business venture from the start, and is growing in literary excellence steadily. It covers the field of fashion, as well as light reading; talks to the household, the young, and, indeed, all home classes. The competitions have been used to assist the introduction of the magazine, for where it is introduced it is quite certain to remain a monthly guest. The leading prizes have been made, as instance this latest to Kingston, while many smaller prizes have rewarded the moderately successful among competitors. THE CANADIAN QUEEN is truly royal in its ways."—*The (Kingston, Ont.) Daily British Whig*, June 27th, 1891.

QUESTIONS IN AMERICAN HISTORY.

1.—Give the names of the early navigators who it is claimed by historians first discovered America.
2.—From whom has America taken its name?
3.—What class and nationality first settled Virginia? New York? Massachusetts? Pennsylvania? Maryland?
4.—What action did the Continental Congress of 1774 take and what was the result of that action?
5.—What was the first battle fought in the War of the Revolution?
6.—What nation rendered the Americans great assistance in the War of the Revolution?
7.—Give the names of the committee appointed to draft the famous Declaration of Independence.
8.—What was the date of the signing of the United States Constitution?
9.—After becoming a nation and before the great Civil War, what were the principal conflicts which engaged the Americans?
10.—What was the direct cause of the Civil War? What Generals of the Northern Army have occupied executive positions under the Federal Government since the closing of the War? Who was Commander-in-Chief and who were the principal Generals of the Confederate Army during the struggle?
11.—How long did this War last and what is the computed loss of life?
12.—What can be said to day of the United States as a nation?

To the *First* gentleman sending the correct answers to the above questions in American History the publishers of THE QUEEN will present **"Majestic"** acknowledged the **Handsomest and Finest Riding Horse in Ontario.** ("Majestic" is sixteen hands high, thoroughbred, seven years old, and valued at $350.00.) To the *First* lady the publishers of THE QUEEN will present an elegant **Jacket of Genuine Alaska Seal** to be made according to the measurement supplied by the winner. To the *First* boy under sixteen years of age the publishers of THE QUEEN will present a **Little Giant Safety Bicycle** valued at $75.00. To the *First* girl under sixteen years of age the publishers of THE QUEEN will present an elegant **Music Box,** playing twenty tunes, finely finished and valued at $55.00.

To the gentleman from whom the *Last* correct answers are received before the close of this Competition, the publishers of THE QUEEN will present a **First Cabin Passage to Europe and Return** and **$200 in Gold** for expenses. This trip can be taken by the winner any time before October 1st, 1892. To the lady from whom the *Last* correct answers are received before the close of this Competition the publishers of THE QUEEN will present a **Pony, Cart and Harness.** To the boy under sixteen years of age from whom the *Last* correct answers are received before the close of this Competition the publishers of THE QUEEN will present a **Solid Gold Watch** containing one of the best American movements, and valued at $75.00. To the girl under sixteen years of age from whom the *Last* correct answers are received before the close of this Competition the publishers of THE QUEEN will present an elegant **Solid Gold Watch,** containing one of the best American movements, and valued at $65.00.

ADDITIONAL PRIZES IN ORDER OF MERIT: Silver Tea Services, Ladies' Gold Watches, Silk Dress Patterns, French Mantel Clocks, Portiere Curtains, Toilet Cases, Manicure Sets, and many other useful and valuable articles.

The object of the publishers in offering these liberal prizes is to introduce THE QUEEN Magazine into **new** homes. Answers must be mailed *on or before* November 10th, 1891, and must be accompanied by $1.00 for one year's subscription to THE CANADIAN QUEEN. Prizes awarded to subscribers residing in the United States will be shipped to them **free of duty.** The distribution of awards is in the hands of disinterested persons, and decisions will be based on the correctness of answers. Use your own language in wording the answers. No corrections can be made after your answers are mailed. THE QUEEN is a large, forty-eight page family magazine, especially interesting to ladies and children, and visits regularly **over one hundred thousand of the best homes** in Canada and the United States. The awards in THE QUEEN'S Prize School of History are made strictly with regard to merit, without partiality to persons or locality. The decisions must be accepted as final. If you have never seen a copy of THE QUEEN send six U. S. two cent stamps and receive a late number, post paid, containing letters from those who have received rewards in previous contests.

Address THE CANADIAN QUEEN, PRIZE SCHOOL OF HISTORY, 58 BAY STREET, TORONTO, CANADA.

AN EDUCATION FREE! Do you want a good business education, including English Branches, Commercial Law, Business Forms or Book-keeping, or Shorthand and Typewriting, Languages, or Architectural or Mechanical Drawing, or Elocution **ABSOLUTELY FREE** in one of the largest, oldest and most prominent Business Colleges in the country? All you have to do is to get up Clubs for the **BUSINESS WORLD,** one of the brightest, newsiest and best office and home papers in the country. Established 14 years. Subscription price, with premium worth price of subscription, only $1.00 per year; handsomely illustrated. The BUSINESS WORLD will give Scholarships to those getting up Clubs. Write for particulars, **BUSINESS WORLD,** 15 WILCOX AVE., DETROIT, MICH.

Grand Excursion

—TO—

WATERTOWN,

SOUTH DAKOTA,

UNDER THE AUSPICES OF

RAYMOND & WHITCOMB.

Leave Boston, Lowell Depot, at 8.45 A. M., **TUESDAY, September 29,** *via* Boston & Maine, Vermont Central and Grand Trunk Railroads to Chicago, and from Chicago to Watertown by the

GREAT

ROCK ISLAND ROUTE.

Arrive at Watertown, 6 A. M., **FRIDAY, October 2.** Spend Three Days at Watertown.

Leave Watertown, **October 4,** 11 P. M., arrive at Chicago, 6 A. M., **October 6.** Leave Chicago, 12 noon **October 7,** reaching Boston, **FRIDAY, October 9.**

FARE FOR ROUND TRIP,

Including Pullman Sleeping accommodations. Double berth to each passenger, **$57.60**

Meals by special arrangements will not exceed 50 cents apiece. Address

RAYMOND & WHITCOMB,

296 Washington Street, BOSTON,

Or the WATERTOWN LAND AND IMPROVEMENT CO., 67 Equitable Building, Boston, Mass.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 40. NEW YORK, THURSDAY, OCTOBER 1, 1891. WHOLE No. 240

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - $1.00 per year.
Single Copies, - - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50

Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.

Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,
H. LASSING, M. D., } Editors.
T. P. McELRATH, }
No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

An Adulteration Advocate 473
Bright Stories 472
The Quick-Boy Sand.—*Concluded.*
Degeneration and Evolution 470
Domestic Dietetics 475
Editorials 469
Woman in 1893; Many Thanks; Bamboo Culture; Ammonia in Baking Powders.
Ghosts and Visions 474
Insomnia 471
New York Homes 474
The Primeval Horse 474
The Weaker Sex 470
Those Good Old Days 471
Water Gas 471

WOMAN IN 1893.

The Board of Lady Managers of the World's Fair to be held in 1893 in Chicago has decided upon the general nature and arrangement of the contents of the Women's Building. Adjoining the main entrance will be a bureau of information, where visitors can secure answers to questions, and here girls and women as interpreters and guides will be supplied. In the main gallery will be a special exhibit of the most brilliant things women have done. Whenever it can be done, duplicates of especially fine work by women, shown in the main buildings, will be secured for the Woman's Building. The Bellevue Hospital of New York will probably have charge of the trained nurse department. Model kindergartens will be a conspicuous feature. Another room will show the literary work of women. There will be in another room a collection of quaint fabrics and rare old laces. A model kitchen will give practical illustrations of culinary methods and the newest appliances. In the second story will be a large assembly hall, which will be the scene of many meetings of importance to women. Here will also be a club room for women journalists. The committee and administration rooms will form the wings of the third floor, the roof garden occupying the centre.

MANY THANKS.

There is a little paper which arrives every week amongst my exchanges. It is called the AMERICAN ANALYST, and is published at 19 Park Place, New York City. When I say that there is no paper received by me that contains more varied or useful information I only tell the plain unvarnished truth. It only costs one dollar per year and is worth ten times that amount. To the housewife, it is full of useful hints and valuable receipts, and, in fact, is full of information which cannot but be profitably read by all. It is nicely printed and ably edited. You cannot spend a dollar with more profit to yourself than you can by securing this truly valuable paper. Try it.

The above pleasant notice of the AMERICAN ANALYST appeared in the September 19th issue of the *True Democrat*, a weekly newspaper edited by Mr. T. H. Graham, and published in Baltimore. We thank our Maryland contemporary for his appreciative and commendatory remarks. This journal is not often called to the attention of the public through political mediums, and in the present instance we recognize a special significance which imparts peculiar emphasis to the compliment. For a "true" Democrat, whether regarded politically or otherwise, must of necessity represent the loftiest type of humanity, a "true" man, and as such is a synonyme for "the noblest work of God." Hence our gratification.

BAMBOO CULTURE.

According to a Washington correspondent, our government agricultural bureau is interesting itself in fostering the cultivation of the bamboo, in the fond hope that it may yet be raised in this country, as it is in China, where it supplies a large part of the wants of the people, being applied to more than five hundred different and useful purposes. The useful applications of the bamboo are wonderful in their variety. In the Flowery Kingdom it takes the place both of iron and steel. The farmer builds his house and fences out of it, his farming utensils as well as his household furniture are manufactured from it, while the tender shoots furnish him with a most delicious vegetable for his table. The roots are carved into fantastic images, shaped into divining blocks, to guess the will of the gods, or cut into lantern handles and canes. The tapering culms are used for the props of houses, the frameworks of awnings, the ribs of sails and shafts of rakes, for fences, and every sort of frames, coops, and cages, and for the handles and ribs of umbrellas and fans. The leaves are sewed into rain coats and thatches. The wood, cut into splints of various sizes, is woven into baskets of every form, sewn into window curtains and door screens, and twisted into cables. The shavings and curled threads furnish materials for stuffing pillows, while parts supply the bed for sleeping, the chop-sticks for eating, the pipe for smoking, the broom for sweeping, the mattress to lie upon, the chair to sit upon, the table to eat on, the food to eat, and the fuel to cook it with. The ferule to govern with the book to study from, the reed pipe of the organ, the shaft of the soldier's spear, and the dreaded instrument of the judge; the skewer to pin the hair, and the hat to screen the head; the paper to write on, the pencil to write with, and the cup to put the pencil in; the rule to measure lengths, the cup to gauge quantities, and the bucket to draw water; the bird cage, the crab net, the fish pole—are one and all furnished by this plant, whose beauty when growing is commensurate to its usefulness when cut down. A score or two of bamboo poles for joists and rafters, fifty fathoms of rattan ropes, and a supply of palm leaves and bamboo mats for a roof, supply material for a common hut in the South of China.

AMMONIA IN BAKING POWDERS.

The Royal Baking Powder Company having for years fought shy of making any defense of its use of ammonia in baking powder has at last been driven in a corner, and in its usual disingenuous manner now causes reading notices to be published which pretend to give the transactions of the American Chemical Society. This is so garbled as to seem to convey the impression that the best chemists in the country have come to the conclusion that ammonia is a necessary ingredient in all baking powders, in fact, that any baking powder which does not contain this nauseous drug cannot be wholesome. Ammonia not only neutralizes any acidity but also serves to keep the bread fresh. It goes without saying that this is arrant nonsense gotten up by the paid chemists of the Royal Ammonia Company. Dr. H. Endemann has addressed a letter to the *Tribune* on the subject, in which he says: "I have just seen the report of the discussion at the Washington meeting of the American Chemical Society, August 18, relative to the use of carbonate of ammonia in baking powders. This report is incomplete and incorrect in many particulars, and as the paper which precipitated the discussion was read by me and was based upon my own experience, I desire to make certain corrections in the interest of the truth and for the benefit of the large number of your readers to whom the question is one of great moment. The paper as read before the society related that ammonia in baking powder is retained in the bread by reason of its affinity to the gluten. The consensus of opinion as expressed during the discussion was against the use of carbonate of ammonia in baking powder with the only exception of Dr. McMurtrie, who is now an employee of a baking-powder com-

pany which uses carbonate of ammonia in its baking powder. Of the other parties mentioned as having taken part in the discussion were Professor Dr. Barker, of the University of Pennsylvania, who is the president of the society and one of our highest authorities. In answer to a pleading by Professor McMurtrie that only small quantities of ammonia were used in baking powders, he stated: 'No matter how small the quantity, I must decline to be dosed medically without my consent when taking my meal's. Dr. E. H. Bartley, formerly chemist of the Brooklyn Board of Health, and Professor of Chemistry at the Long Island College, likewise named, did not, I believe, take active part in the discussion, but is already on record as strongly opposed to the use of ammonium carbonate in baking powders. Dr. Richardson volunteered only the question whether the flour used in the experiments was of good quality, of which I assured him by stating that it was the best, and the flour used in my family. Professor Mallet was not present. Your article is misleading in so far as it gives the impression that ammonia disappears on baking. My actual tests agree with those made by others, showing that ammonia remains in the bread. My investigations simply assign a new cause for its retention."

THE WEAKER SEX.

WHICH REPRESENTS IT, THE MAN OR THE WOMAN?

The subjoined discussion of the share of the family toil that falls to the lot of woman in the middle sphere of life, is respectfully commended to the attention of the fair representatives of the "Four Hundred" constituting the uppermost sphere: It seems to be accepted as a fact that woman in contrast with man is far the weaker. The reasons for it are not quite clear, and perhaps to frequent repetition it owes its greatest force. In the matter of brute strength certainly to women must be given second place, but when it comes to endurance, which is scarcely separable from strength, in many situations in life she would most assuredly show herself able to bear far heavier burdens than man. Probably nowhere else is this truth as apparent as in the sick-room. There man and woman meet on an equal footing, neither having any advantage. And it is there that she proves that instead of being the weaker she is infinitely the stronger and more enduring. Let a wife be taken ill, and for twenty-four hours the husband is untiring in his devotion, and very likely he scarcely leaves her bedside. The second day finds him still at his post, but he is beginning to weaken, even the loss of one night's sleep has nearly "broken him up." But the third day he is comparatively a wreck, and ready to yield his place as nurse to any one who will fill it. Not so, however, with the wife when he is ill. Day after day and night after night she hangs over him, never for a moment thinking of intrusting him to the care of another. If she sleeps, it is in her chair by his bedside while he dozes. She scarcely lies down, and perhaps for weeks and weeks only removes her clothes for a change of linen. And yet she never seems to tire; and, as a matter of fact, many frail women seem actually to gain strength when exposed to such hardships. The world may accept that woman is the weaker, but no physician who has been long in practice will be convinced that such is the case. Man compares with woman as does cast iron with steel. He is strong, and yet is comparatively easily shattered, whereas you can bend her, you can put her to tests which would, figuratively speaking, pulverize him, and yet you cannot "break her up." Take her outside of the sick room. She is—at least many married women are—up first in the morning. She builds the fires and makes breakfast ready. Before the table can be "cleared off" her children must be scrubbed, combed, etc., for school. With them out of the house, unless there is a baby in the family—and there almost always is one in the home of every poor, overworked woman—she has a breathing spell. But it cannot last long, for there are the dishes to wash, the kitchen to "tidy," the chamber work to do, and when these and other customary duties are performed it is time to get dinner. That ought to be off the table and "things put away" by two or half past two, and then she has reached her first opportunity to rest. But she does not rest, although she may think she does, for she generally sews until supper time and returns to her sewing after supper dishes are cleared away, and she is not likely to lay aside her needles until bedtime comes. But this is the routine work of only about one day in week. Very likely Monday is washing day, and on Tuesday there is the ironing to do. Wednesday is one of the cooking days with almost all women. Thursday is the day we have partially described, and is called the easy day. Friday the broom must be called into special service, and a general sweeping takes place. Saturday is one of the hardest days in the week, while Sunday—the day of rest for man and beast—finds the wife and mother still on duty, for the greater part of it at least. We have given but a bare idea of the common experiences of about three-fourths of all our women; with them it is work, work, day in and day out, with scarcely a moment which they can call their own; in fact, they work about sixteen hours a day. Husbands, on the other hand, consider even ten hours at bench, at the counter or desk too long for them, and really only feel equal to eight hours a day. Night finds them tired and worn, and the evenings must be spent in recuperating. On half time on Saturdays, and Sundays there being absolutely nothing for them to do, they, somehow or other, manage to "pull themselves together" by Monday, so as to take up their burdens again. The many holidays in the year help them out considerably; so they are enabled to bear the strain. And we style woman weak, while man is our ideal of strength. Could anything be more absurd? Let the average woman change places with her husband, and she would be a widow in a few years. Yet not only in health does woman show her superiority over man in the way of strength and endurance, but it is the same in disease. Attacks which man is likely to succumb to are less likely to prove fatal in woman. Perhaps in consumption, as well as any other malady, is the fact apparent. It is safe to say that, take a man and a woman in the early stages of lung disease, and if one attack be of the same severity as the other, the woman will outlast the man by many months, and possibly by years.

DEGENERATION AND EVOLUTION.

BIOLOGICAL CONSIDERATIONS OF PROCESS AND RETROGRESSION.

Mr. H. G. Wells, writing for the *Gentleman's Magazine* (London), says: Perhaps no scientific teaching has been exposed to a greater amount of popular misconception than the doctrine of evolution. In the popular conception, life began with the amœba, then came jelly fish, shell fish, and a miscellaneous mass of invertebrates; then real fishes and amphibia, reptiles, birds, mammals, and man, the last and first of creation. This is not the teaching of science. On the contrary, biology, along with advance, teaches retrogression as its essential complement. Isolated cases of degeneration have long been known. It is only recently that the enormous importance of degeneration as a plastic process in nature has been suspected and its entire parity with evolution recognized. In fact, the path of life so frequently compared to a steady ascent, an indication of an inevitable tendency to higher and better things, is distinctly repudiated by scientific observers. The sounder view is that living species have varied along divergent lines from intermediate forms and by no means necessarily in an upward direction. The best known, and perhaps the most graphic and typical illustration of the downward course, is to be found in the division of the *Tunicata*. The untrained observer would probably class it near the oyster and the mussel, and a superficial study of its anatomy might even strengthen this opinion. As a matter of fact, however, these creatures are far more closely related to the vertebrata, a fact exhibited in the details of their development. It is a matter of common knowledge that living creatures in the course of their embryonic development repeat, in a more or less blurred and abbreviated series, their generalized pedigree. For instance, the developing chick or rabbit passes through a fish-like stage, and the human fœtus wears an undeniable tail. In the case of these ascidians (the Tunicata) the fertilized egg-cell destined to become a fresh individual follows an entirely different course from that pursued by the molluscs; the dividing and growing ovum exhibits phases resembling in the most remarkable way those of the lowliest among fishes, the lancelot or *amphioxus*. The method of division, the formation of the primitive stomach and body cavity, and the origin of the nervous system are identical, and a stage is attained in which the young organism displays—or stimulates—vertebrate characteristics. It has a *notochord*, or primary skeletal axis; it displays gill-slits behind its mouth, as do all vertebrated animals in their earlier stages, and the origin and position of its nervous axis is essentially vertebrate. In these three independent series of structures the young ascidian differs from all invertebrate animals, and manifests its high descent from the vertebrates. It is an evident case of retrogression. Like a tadpole this animal has a well-developed tail, with which it propels itself vigorously through the water; it has serviceable sense organs, and appears in this, its earlier stages, to be full of vigorous, enjoyable life; but scarcely is this stage attained before the animal undergoes a process of retrogression. It develops suckers, by means of which it attaches itself to the rocks, its tail is absorbed, eye and ear atrophy, and the skin secretes the coarse inorganic looking "test;" the transient glimpse of vivid animal life is forgotten, and the creature settles down for life to a mere vegetable existence. In some cases the degradation has been a strategic retrogression—the type "stoops to conquer." This is, perhaps, most manifest in the case of the higher vertebrate animals. It is one of the best-known embryological facts that a bird or a mammal starts in its development as if a fish were in the making, and that later the organs get twisted and patched to fit a life out of water—nowhere organs built specially for this very special condition. There is nothing like this in the case of a fish. There the organs are from the first recognizable sketches of their adult forms, and they develop straightforwardly, but the higher types go a considerable distance towards the fish, and then turn round and complete their development in an entirely opposite direction. This turning is evidently precisely similar in nature, though not in effect, to the retrogression of the ascidian after its pisciform or larval stage. If a zoological investigator could have visited the earth during the upper Silurian period, and with prophetic eye could have singled out the ancestors of man, he would have found them, not among the dominant placoid fishes of the Silurian sea, but in the *Dipnoi* or mud fish, swimming in the pluvial waters, or inert and caked over by the torrid mud. He would have found in conjunction with the purely primitive skull, axial skeleton, and fin possessed by these Silurian mud fish a remarkable adaptation of the swimming bladder to the needs of the waterless season. It would have undergone the minimum amount of alteration to render it a lung, and blood vessels and other points of the anatomy would show correlated changes. Here we have the old story of degeneration over again; the mud fish had failed in the struggle, they were less active and powerful than their rivals of the sea, and they had taken the second great road of preservation, flight. Just as the ascidian has retired from an open sea, too

crowded and full of danger to make life worth the trouble, so, in the older epoch, did the mud fish. They preferred dirt, discomfort and survival to a gallant fight and death. Very properly, then, they would be classed in our zoologists' scheme as a degenerate group. But some of them have risen in the world again; they came out of the rivers, gave birth to the amphibia of the coal, which gave place presently to the central group of reptiles, from which sprang divergently birds and mammals, and finally the last of the mud fish family, man—the heir of all the ages.

THOSE GOOD OLD DAYS.

TABLE CUSTOMS OF OUR BRITISH ANCESTORS.

A thousand years ago, when the dinner was ready to be served, the first thing brought into the great hall was the table. Movable trestles were brought, on which were placed boards, and all were carried away again at the close of the meal. Upon this was laid the tablecloth, which in some of the old pictures is represented as having a handsome embroidered border. There is an old Latin riddle of the eighth century in which the table says: "I feed people with many kinds of food. First I am a quadruped, and adorned with handsome clothing; then I am robbed of my apparel and lose my legs also." The food of the Anglo-Saxon was largely bread. This is hinted in the fact that a domestic was called a "loaf-eater," and the lady of the house was called a "loaf-giver." The bread was baked in round, flat cakes, which the superstition of the cook marked with a cross, to preserve them from the perils of the fire. Milk, butter and cheese were also eaten. The principal meat was bacon, as the acorns of the oak forests, which then covered a large part of England, supported numerous droves of swine. Our Anglo-Saxon forefathers were not only hearty eaters, but, unfortunately, deep drinkers. The drinking-horns were at first literally horns and so must be immediately emptied when filled; later, when the primitive horn had been replaced by a glass cup, it retained a tradition of its rude predecessor in its shape, for it had a flaring top while tapering toward the base, so that it, too, had to be emptied at a draught. Each guest was furnished with a spoon, while his knife he always carried in his belt; as for forks, who dreamed of them when nature had given man ten fingers? But you will see why a servant with a basin of water and a towel always presented himself to each guest before dinner was served and after it was ended. Roasted meat was served on the spit or rod on which it was cooked, and the guest cut or tore off a piece to suit himself. Boiled meat was laid on the cakes of bread, or later, on thick slices of bread called "trenchers," from a Norman word meaning "to cut," as these were to carve the meat on, thus preserving the tablecloth from the knife. At first the trencher was eaten or thrown upon the stone floor for the dogs who crouched at their master's feet. At a later date it was put in a basket and given to the poor who gathered at the manor-gate. During the latter part of the Middle Ages, the most conspicuous object on the table was the salt-cellar. This was generally of silver in the form of a ship. It was placed in the centre of the long table, at which the household gathered, my lord and lady, their family and guests being at one end and their retainers and servants at the other. So one's position in regard to the salt was a test of rank—the gentlefolks sitting "above the salt" and the yeomanry below it. In the houses of the great nobles dinners was served with much ceremony. At the hour a stately procession entered the hall. First came several musicians, followed by the steward bearing his rod of office, and then came a long line of servants carrying different dishes. Some idea of the variety and profusion may be gained from the provision made by King Henry III. for his household at Christmas, 1254. This included thirty-one oxen, one hundred pigs, three hundred and fifty-six fowls, twenty-nine hares, fifty-nine rabbits, nine pheasants, fifty-six partridges, sixty-eight woodcock, thirty-nine plovers, and three thousand eggs. Many of our favorite dishes have descended to us from the Middle Ages. Macaroons have served as dessert since the days of Chaucer. Our favorite winter breakfast, griddle cakes, has come down to us from the far-away Britons of Wales, while the boys have lunched on gingerbread and girls on pickles and jellies since the time of Edward II., more than five hnndred years ago.

WATER GAS.

SO CALLED, THOUGH NOT MADE FROM WATER.

The above name is applied to a kind of gas which, in many cities, is largely used for illuminating and heating purposes. The cost of manufacture is, apparently, somewhat less than that of gas distilled from bituminous coal in the old way, and, for this reason, some gas companies have altered their plant so as to manufacture the water gas exclusively. The term "water gas" is misleading, for water does not contain any of the gas, although it is used in the process of manufacture. The use of such a name tends to confirm the erroneous belief held by so many people, that, by some chemical process, water may be made to burn; and many have been the fraudulent inventions claiming to accomplish this impossibility. Water is a product of combustion, and all the chemical affinities of its constituent atoms are neutralized. It is a perfectly neutral, impassive body, and contains neither fire nor force. Water gas is the product of a peculiar chemical reaction which takes place when steam is passed over red-hot coals. The steam is decomposed by the carbon of the coal, and a mixture of carbonic dioxide, carbonic oxide, and hydrogen is the result. The reaction, expressed by chemical symbols, is as follows:

$$\underset{\text{steam.}}{4H_2O} + \underset{\text{carbon.}}{C_3} = \underset{\text{carbonic dioxide.}}{CO_2} + \underset{\text{carbonic oxide.}}{2CO} + \underset{\text{hydrogen}}{H_8}$$

The last two gases are inflammable, and constitute the valuable constituents of the mixture. Water gas, as constituted above, burns with a hot but non-luminous flame. It is exceedingly well adapted for use as fuel without further preparation, and, in some cities, is largely used for this purpose. To render it luminous, crude petroleum is allowed to flow into the retorts; and the heavy hydrocarbon vapors resulting from its decomposition so "enrich" the water gas that it is rendered as luminous as coal gas, and, after being purified, can be burnt from an ordinary burner in the same way. The only objection to the general use of water gas is the large percentage of carbonic oxide it contains. This gas is extremely poisonous when inhaled, and many cases of death from this cause have been reported. Coal gas contains a much smaller percentage of carbonic oxide, and, on this account, is less dangerous in case of an accidental leak. Considering the large number of consumers of water gas, however, the number of accidents has been so few that the danger would seem to be very slight. Water gas is also quite inodorous and without the characteristic smell of coal gas. A leak occurring in a building is thus likely to escape detection until a dangerous quantity has escaped. To remedy this fault it has been proposed to add a minute trace of mercaptan—a sulphur compound of an extremely offensive odor—to the gas. While this would not injure its illuminating qualities in any way, and would be perfectly inoffensive after being burnt, it would make its presence at once manifest in case of any accidental escape of the gas, and lead to the prompt repair of the pipes. In Massachusetts the amount of carbonic oxide in illuminating gas is forbidden by law to exceed a certain per cent.; consequently the use of water gas in the State is very limited. In most States, however, there is no restriction upon its composition, and the only reason that water gas has not come into almost universal use is probably due to the small difference between the cost of its production and that of gas distilled from coal in the old-fashioned away.

INSOMNIA.

EXPERIMENT RESORTED TO BY A SUFFERER FROM SLEEPLESSNESS.

"I own an empty palace in a strange country, said a congressman who suffers from insomnia the other day to a Washington *Star* reporter. "When I am trying to get sleep I visit it. It is a dismal edifice built in the form of a square and ever so many stories high, with but one entrance, at the front. A corridor runs all around it within, and inside the building there is a great open court, upon which every room looks out. There are forty rooms on each side of each story opening on the corridor. I make it my business at such times to inspect them. None of them are locked, because there is nothing to steal. I am obliged to examine all the rooms, and for this purpose I begin at No. 1 on the north-west corner, and follow the numbers along. Each door I come to I must open and after looking in must close it again. In this way I inspect each of the forty rooms on the west side. A brief look is sufficient because they are all precisely alike and have no furniture in them. Then I keep on along the south side, opening each door, looking in and shutting it in its turn. Thus I pursue my way around until I have finished with the eighty rooms on the first floor, arriving at the north-west corner again. At that corner is an elevator, conducted by the only living being in the edifice. He is deaf and dumb. He transports me to the second floor, where I inspect all the eighty rooms in the same fashion. It is monotonous work. They are all precisely like those below, none of them is occupied or has any furniture. Once in a while I enter one of the apartments, go to the single window at the further end and look out upon the court. It is empty. When I have finished the second floor the deaf and dumb man conveys me by the elevator to the third story. I do that in like manner, and after it the fourth and fifth, and so on. The task is a tiresome one. I have to keep the run of the number of the rooms, or else go back to the north-west corner on whatever floor I may happen to be and begin over again. There is an indefinite number of stories, so that sooner or later I am sure to fall asleep. In fact, I can get to sleep easier at that work than in any other way, and I recommend every one who suffers from insomnia to have a palace like mine in the land of nod with a deaf and dumb man to run the elevator."

TELEPHONIC RISKS.—Danzig officials have discovered that bacillary infections can be communicated by the "membranes" of telephones.

LIGHTNING CALCULATOR.—The earth is gradually growing larger from the fall of meteoric matter. An astronomer estimates that the globe is annually being pelted with 143 000,000 projectiles.

CUBIC WEALTH.—It has been estimated that the amount of gold in coin or ornament in the world is about 613 cubic yards, and that it would fit in a room 24 feet each way if in a solid cube.

DEVOURING LOVE.—The Shan Chinese, a people living between Burmah and China, show their love for their parents by killing them and eating them to save them from the misery of old age.

GOOD, IF TRUE.—A Frenchman has succeeded in making commercially pure chloroform. Heretofore this has been considered impossible. As the impurities in chloroform are generally the cause of fatal effects, the Frenchman's achievement is regarded as very important.

BRIGHT STORIES.

THE QUICK-BOY SAND.

(*Concluded from page* 461.)

When my senses returned, I became aware, first, that I was lying, bound hand and foot and securely gagged, upon the turf; secondly, that the horses were still tethered and standing quietly at the foot-bridge; and thirdly, that my companion had resumed his position on the bowlder, and there sat watching my recovery.

Seeing my eyes open, he raised his hat and addressed me in tones of grave punctilio.

"Believe me, sir. I am earnest in my regret for this state of things. Nothing but the severest necessity could have persuaded me to knock the son of my late esteemed friend over the skull and gag his utterance with a stone—to pass over the fact that it fairly lays my sense of your hospitality under suspicion. Upon my word, sir, it places me in a cursedly equivocal position!"

He took a pinch of snuff, absorbed it slowly, and pursued:

"It was necessary, however. You will partly grasp the situation when I tell you that my name is Teague—the Rev. William Teague, Doctor of Divinity, and formerly incumbent of Bleakirk-on-Sands."

His words explained much, though not everything. The circumstances which led to the Rev. William's departure from Bleakirk had happened some two years before my birth; but they were startling enough to supply talk in that dull fishing village for many a long day. In my nursery I had heard the tale that my companion's name recalled; and if till now I had felt humiliation, henceforth I felt absolute fear, for I knew that I had to deal with a madman.

"I perceive by your eyes, sir," he went on, "that with a part of my story you are already familiar; the rest I am about to tell you. It will be within your knowledge that late on a Sunday night, just twenty-nine years ago, my wife left the vicarage house, Bleakirk, and never returned; that subsequent inquiry yielded no trace of her flight, beyond the fact that she went provided with a small hand-bag containing a change of clothing; that, as we had lived together for twenty years in the entirest harmony, no reason could then, or afterwards, be given for her astonishing conduct. Moreover, you will be aware that its effect upon me was tragical; that my lively emotions underneath the shock deepened into a settled gloom; that my faculties (notoriously eminent) in a short time became clouded, nay, eclipsed—necessitating my removal (I will not refine) to a mad-house? Hey, is it not so?"

I nodded assent as well as I could. He paused, with a pinch between finger and thumb, to nod back to me. Though his eyes were now blazing with madness, his demeanor was formally, even affectedly, polite.

"My wife never came back; naturally, sir—for she was dead."

He shifted a little on the bowlders, slipped the snuff-box back into his waistcoat pocket, then, crossing his legs and clasping his hands over one knee, bent forward and regarded me fixedly.

"I murdered her," he said, slowly, and nodded.

A pause followed that seemed to last an hour. The stone which he had strapped in my mouth with his bandana was giving me acute pain; it obstructed, too, what little breathing my emotion left me, and I dared not take my eyes off him. The strain on my nerves grew so tense that I felt myself fainting, when his voice recalled me.

"I wonder now," he asked, as if it were a riddle—"I wonder if you can guess why the body was never found?"

Again there was an intolerable silence before he went on.

"Lydia was a dear creature; in many respects she made me an admirable wife. Her affection for me was canine—positively. But she was fat, sir; her face a jelly, her shoulders mountainous. Moreover, her voice!—it was my cruciation—monotonously, regularly, desperately voluble. If she talked of archangels, they became insignificant—and her themes, in ordinary, were of the pettiest. Her waist, sir, and my arm had once been commensurate; now not three of Homer's heroes could embrace her. Her voice could once touch my heart-strings into music; it brayed them now, between the millstones of the commonplace. Figure to yourself a man of my sensibility condemned to live on these terms!"

He paused, tightened his grasp on his knee, and pursued:

"You remember, sir, the story of the baker in Langius? He narrates that a certain woman conceived a violent desire to bite the naked shoulders of a baker who used to pass underneath her window with his wares. So imperative did this longing become, that at length the woman appealed to her husband, who (being a good-natured man and unwilling to disoblige her) hired the baker, for a certain price, to come and be bitten. The man allowed her two bites, but denied a third, being unable to contain himself for pain. The author goes on to relate that, for want of this third bite, she bore one dead child and two living. My own case," continued the Rev. William "was somewhat similar. Lydia's unrelieved babble reacted upon her bulk, and awoke in me an absorbing, fascinating desire to strike her. I longed to see her quiver. I fought against the feeling, stifled it, trod it down—it awoke again. It filled my thoughts, my dreams; it gnawed me like a vulture. A hundred times while she sat complacently turning her inane periods, I had to hug my fist to my breast, lest it should leap out and strike her senseless. Do I weary you? Let me proceed:

"That Sunday evening we sat, one on each side of the hearth, in the vicarage drawing-room. She was talking—talking; and I sat tapping my foot and whispering to myself, 'You are too fat, Lydia, you are too fat.' Her talk ran on the two sermons I had preached that day, the dresses of the congregation, the expense of living, the parish ailments—inexhaustible, trivial, relentless. Suddenly she looked up and our eyes met. Her voice trailed off and dropped like a bird wounded in full flight. She stood up and took a step toward me. 'Is anything the matter, William?' she asked, solicitously. 'You are too fat, my dear,' I answered, laughing, and struck her full in the face with my fist.

"She did not quiver much—not half enough—but dropped like a half-full sack onto the carpet. I caught up a candle and examined her. Her neck was dislocated. She was quite dead."

The madman skipped up from his bowlder and looked at me with indescribable cunning.

"I am so glad, sir," he said, "that you did not bleed when I struck you; it was a great mercy. The sight of blood affects me—ah!" he broke off with a subtle quiver and drew a long breath. "Do you know the sands by Woeful Ness—the Twin Brothers?" he asked.

I knew that dreary headland well. For half a mile beyond the gray church and vicarage of Bleakirk it extends, forming the northern arm of the small fishing-bay, and protecting it from the full set of the tides. Toward its end, it breaks away sharply, and terminates in a dorsal ridge of slate-colored rock that runs out for some two hundred feet between the sands we call the "Twin Brothers." Of these, that to the south and inside the bay is motionless, and bears the name of the "Dead-Boy;" but the "Quick-Boy," to the north, shifts continually. It is a quicksand, in short, and will swallow a man in three minutes.

"My mind," resumed my companion, "was soon made up. There is no murder, thought I, where there is no corpse. So I propped Lydia in the arm-chair, where she seemed as if napping, and went quietly upstairs. I packed a small handbag carefully with such clothes as she would need for a journey, descended with it, opened the door, went out to be sure the servants had blown out their lights, returned, and hoisting my wife on my shoulder, with the bag in my left hand, softly closed the door and stepped out into the night. In the shed beside the garden gate the gardener had left his wheelbarrow. I fetched it out, set Lydia on the top of it, and wheeled her off towards Woeful Ness. There was just the rim of a waning moon to light me, but I knew every inch of the way.

"For the greater part of it I had turf underfoot, but where this ended and the rock began I had to leave the barrow behind. It was ticklish work, climbing down; for footing had to be found, and Lydia was a monstrous weight. Pah! how fat she was and clumsy, lolling this way and that; besides, the bag hampered me. But I reached the foot at last, and, after a short rest, clambered out along the ridge as fast as I could. I was sick and tired of the business.

"Well, the rest was easy. Arrived at the furthest spit of rock I tossed the bag from me far into the northern sands. Then I turned to Lydia, whom I had set down for the moment In the moonlight her lips were parted as though she were still chattering; so I kissed her once, because I had loved her, and dropped her body over into the Quick-Boy Sand. In three minutes or so I had seen the last of her.

"I trundled home the barrow, mixed myself a glass of whiskey, sat beside it for half an hour, and then aroused the servants. I was cunning, sir, and no one could trace my footprints on the turf and rock of Woeful Ness. The missing handbag and the disarray I had been careful to make in the bedroom, provided them at once with a clew—but it did not lead them to the Quick-Boy. For two days they searched; at the end of that time it grew clear to them that grief was turning my brain. Your father, sir, was instant with his sympathy; at least ten times a day I had much ado to keep from laughing in his face. Finally two doctors visited me, and I was taken to a mad-house.

"I have remained within its walls twenty-nine years—but no, I have never been thoroughly at home there. Two days ago I discovered that the place was boring me, so I determined to escape; and this, to a man of my resources, presented few difficulties I borrowed this pony from a stable not many yards from the mad-house walls; he belongs, I think, to a chimney-sweep, and I trust that, after serving my purpose, he may find a way back to his master."

I suppose at this point he must have detected the question in my eyes, for he cried, sharply:

"You wish to know my purpose? It is simple." He passed a thin hand over his forehead. "I have been shut up, as I say, for twenty-nine years, and I now discover that the mad house bores me. If they retake me—and the hue and cry must be out long before this—I shall be dragged back. What, then, is my proposal? I ride to Bleakirk and out along the summit of Woeful Ness. There I dismount, turn my pony loose, and, descending along the ridge, step into the sand that swallowed Lydia. Simple, is it not? *Excessi, evasi, evanui.* I shall be there before sunset—which reminds me," he added, pulling out his watch, "that my time is nearly up. I regret to leave you in this plight, but you see how I am placed. I felt, when I saw you, a sudden desire to unbosom myself of a secret, which, until the past half hour, I have shared with no man. I see by your eyes again that if set at liberty you would interfere with my purpose. It is unfortunate that scarcely a soul ever rides this way—I know the road of old. But to-morrow is Sunday; I will scribble a line and fix it on the church door at Bleakirk, so that the parish may, at least, know your predicament before twenty-four hours are out. I must

now be going. The bandana about your mouth I entreat you to accept as a memento. With renewed apologies, sir, I wish you good day; and count it extremely fortunate that you did not bleed."

He nodded in the friendliest manner, turned on his heel, and walked quietly toward the bridge. As he untethered his pony, mounted, and ambled quietly off in the direction of the coast, I lay stupidly watching him. His black coat for some time lay, a diminishing blot, on the brown of the moors, stood for a brief moment on the sky line, and vanished.

I must have lain above an hour in this absurd and painful position, wrestling with my bonds and speculating on my chances of passing the night by the beck side. My ankles were tied with my own handkerchief, my wrists with the thong of my own whip, and this especially cut me. It was knotted immovably; but, by rolling over and over and rubbing my face into the turf, I contrived at length to slip the gag down below my chin. This done, I sat up and shouted lustily.

For a long time there was no reply but the whinnying of my mare, who seemed to guess something was wrong, and pulled at her tether until I thought she would break away. I think I called a score of times before I heard an answering "Whoo-oop!" far back on the road, and a scarlet coat, then another, and finally a dozen or more appeared on the crest of the hill. It was the hunt returning.

They saw me at once, and galloped up, speechless from sheer amazement. I believe my hands were loosened before a word was spoken. The situation was painfully ridiculous; but my story was partly out before they had time to laugh, and the rest of it was gasped to the accompaniment of pounding hoofs and cracking whips.

Never did the Netherkirk Hunt ride after fox as it rode after the Rev. William Teague that afternoon. We streamed over the moor, a thin, red wave, like a rank of charging cavalry, the whip even forgetting his tired hounds that straggled aimlessly in our wake. On the hill above Bleakirk we saw that the tide was out, and our company divided without drawing rein, some four horsemen descending to the beach, to ride along the sands out under Woeful Ness and across the Dead Boy, hoping to gain the ridge before the madman and cut him off. The rest, whom I led by a few yards, breasted the height above and thundered past the gray churchyard wall. Inside it I caught a flying glimpse of the yellow pony quietly cropping among the tombs. We had our prey, then, inclosed in that peninsula as in a trap; but there was one outlet.

I remember looking down toward the village as we tore along, and seeing the fisher-folk run out of their doors and stand staring at the two bodies of horsemen thus rushing to the sea. The riders on the beach had a slight lead of us at first; but this they quickly lost as their horses began to be distressed in the heavy sand. I looked back for an instant. The others were close at my heels; and, behind again, the bewildered hounds followed, yelping mournfully. But neither man nor hound could see him they hunted, for the cliff's edge hid the quicksand in front.

Presently the turf ceased. Dismounting, I ran to the edge and plunged down the rocky face. I had descended about twenty feet, when I came to the spot where, by craning forward, I could catch sight of the spit of rock and the Quick-Boy Sand to the right of it.

The sun—a b'azing ball of red—was just now setting behind us, and its level rays fell full upon the man we were chasing. He stood on the very edge of the rocks, a black spot against the luminous yellow of sea and sand. He seemed to be meditating. His back was toward us, and he perceived neither his pursuers above nor the heads that, at this moment, appeared over the ridge behind him and not fifteen yards away. The party on the beach had dismounted and were clambering up stealthily. Five sceonds more and they could spring upon him.

But they under-estimated a madman's instinct. As if for no reason, he gave a quick start, turned, and, at the same instant, was aware of both attacking parties. A last gleam of sunlight fell on the snuff-box in his left hand; his right thumb and forefinger hung arrested, grasping the pinch. For fully half a minute nothing happened; hunters and hunted eyed each other and waited. Then, carrying the snuff to his nose and doffing his hat with a satirical sweep of the hand and a low bow, he turned again and tripped off the ledge into the jaws of the Quick-Boy.

There was no help now. At his third step, the sand had him by the ankles. For a moment he fought it, then, throwing up his arms, sank forward, slowly and as if bowing yet, upon his face. Second by second we stood and watched him disappear. Within five minutes the riples of the Quick-Boy Sand met once more above him.

In the course of the next afternoon, the Vicar of Bleakirk called at the hall with a paper which he had found pinned to his church door. It was evidently a scrap torn from an old letter, and bore, scribbled in pencil by a clerkly hand, these words: "The young Squire Cartwright in straits by the foot-bridge, six miles toward Netherkirk. *Orate pro anima Gulielmi Teague.*"

AN ADULTERATION ADVOCATE.

ONE WORD FOR THE PUBLIC AND TWO FOR THE SWINDLER.

The *Journal of Commerce* recently received from an anonymous pen a communication which it is pleased to characterize as a "most elaborate defense" of adulteration. From our contemporary's description of the document in question, we should be inclined to regard it as a very flimsy "defense." Our contemporary, after some introductory remarks, says: This writer defends adulterations of every description as altogether in the public interest. Animal fat, digested with a pig's stomach, flavored with a little cream and colored to suit, is just as good, he claims, as butter, if not really better, and can be sold for but little more than half the price of the genuine article. Salad oil made from cottonseed or peanuts can be produced at a much lower cost than that which is pressed from the olive nut, and is every way more desirable. Lard which is only half the product of the pig will maintain its consistency much better by the addition of the vegetable oil, and this discovery is a great boon to the consumer. It suggests that it may be better still if none of its contents come from the defunct swine. In spices the gain to the public health, according to his new creed, is enormous. Pepper and mustard irritate the stomach, and the mild articles used in adulteration diminish the evil. Allspice and cinnamon are ground with adulterants quite as agreeable to the palate and far more healthful. We suppose that if the wooden nutmegs for which Connecticut has been so persistently chaffed could be utilized without injury to the grater, the substitute would also be commended. It is well known that one reason why the physicians of our day have so largely curtailed the administration of remedies is the the fact that but few drugs now on the market are pure, or can be had in their natural condition. This, of course, is used by the defender of adulterations as another reason why there should be no mourning over such mixtures. Anything which will keep the doctors from dosing their patients on the old heroic plan is a blessing, however disguised. The same argument he applies to the adulterations of liquor and wines. His arguments here are a little inconsistent. He contends, first, that the mixtures sold for brandy and the like, or passed off as port, sherry or champagne, are far less likely to injure the system than the genuine product of the distillery or the wine vat; and further that the discovery of such adulterations has done a vast work for the cause of temperance by deterring consumers from the use of these beverages. It would seem that if the adulteration produced an article equal in flavor to the genuine product and less injurious to the health, the dram-drinker or the wine-bibber would not feel the force of the last-named arguments and restrict his potations. Besides, it is our impression that the artificial brandies and wines are not as innocuous as insisted on, and that the concoction is not in the interest of the public health. A similar argument is applied to the manipulation of tea and coffee. The defender of the fraudulent mixture insists that both of these beverages are injurious to man's physical system. Hence the rogue who dries out and redresses tea that has once been used, is saving the human stomach from an injury that might be fatal. And the use of dried and powdered bread, chicory, split peas, and a score of other things that are substituted for the coffee bean is to be commended on similar grounds. We notice that the London *Times* of August 19. calls attention to the novel manufacture on this side of the Atlantic of a substitute for coffee, noticed by us some time since, and which seems more recently to have found a market abroad. The production is not difficult. A compound of rye flour and glucose with a little water, thoroughly mixed and pressed in a mould, makes a berry which not even an expert can distinguish by sight from the genuine article. When ground coffee is sold, anything can be substituted for the berry whose name it bears; but when people become suspicious, and insist on grinding the product for themselves, the adulteration was a little more difficult. The artificial berries now answer all the purpose, and the fraud passes unnoticed. The motives of those who prepare these mixed and artificial products are also freed from reproach, as far as that can be done by this apologist for deception. He contends that as long as people were willing to pay for the genuine articles, the dealers sold them, and that the demand for something cheaper, even if it should be spurious, came from the consumer. We do not credit this statement. The adulterations came from greed. It is true that when one dealer inaugurated the fraud, his competitor felt compelled, as he would argue, to follow the example so as not to lose his customers. This is carrying out in practice the advertising witticism of the two broom merchants, one of whom announced that he could undersell all other dealers because he stole the raw material, while his rival the next day published an answering notice saying he could beat that, for he stole his brooms ready made. One man sells an article at a cheap price because it is only two-thirds genuine, and his competitor defeats the scheme by selling a substitute that is wholly artificial. There is no better field of adventure to day than a return to honest dealing, but it would be a herculean if not impossible task for a dealer to stock up with an assortment every item of which could be certified as genuine.

USEFUL MEASUREMENTS.—Cut this out and keep it handy for ready reference. A rod is 16½ feet, or 5½ yards; a mile is 320 rods; a mile is 1,760 yards; a mile is 5,280 feet; a square foot is 144 square inches; a square yard contains 9 square feet; a square road is 272¼ square feet; an acre contains 43,560 square feet; an acre contains 4,480 square yards; an acre contains 160 square rods; a section or square mile contains 640 acres; a quarter section contains 160 acres; an acre is 8 rods wide by 20 rods long; an acre is 10 rods wide by 16 rods long; an acre is about 208¾ feet square.

SLOW PROGRESS.—According to the census completed in August, the Dominion of Canada has a total population of 4,823,344, against 4,324,810 in 1881, a gain of 498,534, or 11½ per cent. in ten years. During the decade between 1881 and 1891 the Dominion received 886,171 immigrants, and the natural increase by births during the decade was 648,720, making a total increase of 1,534,891, while the census shows an increase of only 498,534. The balance, 1,036,357, represents the Canadians who have left the Dominion in ten years, most of whom have settled in the United States.

NEW YORK HOMES.

A CITY RESIDENCE THAT IS ALTOGETHER UNIQUE IN ITS BEAUTY.

There is a house not far from the Windsor Hotel which is a delight to the artistic sense, and a haven of rest after a round of afternoon calls. when eyes and brain are wearied to desperation by the endless perspective of long parlors and square dining-rooms with pictures along the walls, and tables and chairs at intervals along the floors, so characteristic of average New York dwellings. On the outside there is nothing to distinguish this house from its neighbors, except that the stone balustrade of the stoop has been exchanged for a graceful iron railing, and a single heavy iron-barred oak door closes the entrance. In answer to a ring this door opens slowly, and one stands in a square vestibule, lighted from above by queer Eastern lamps. A dark heavy curtain veils the stairway, and another to the left is drawn half back, inviting one to enter. Following the invitation, one stands in a little anteroom, shut off from the parlor by a screen. This room is dark in coloring, the windows are hung with rich draperies, and between them stands a high antique cabinet. Opposite the door is a great divan, piled high with cushions, and above it hangs a trophy of Oriental armor. A quaint little stool is before the sofa, just handy to sit on while examining the pile of photographs, the work of the mistress of the house, that lie ready at your hand. Going around the screen you find yourself in the main room, a luxuriously furnished library. Bookcases line two sides of it. The walls are a dull Indian red, easy chairs and divans stand anywhere and everywhere, a large library table with gold fittings fills one corner, and the whole is lighted by tall lamps with silk shades. A wood fire in the large open fireplace adds to the attractions of the room, and the perfume of incense burning in some of the many odd Eastern vases scattered about steals over your senses, and invites you to linger in this blest abode, where care seems unknown. It is essentially a "livable" room; books, papers, photographs are scattered about in apparent confusion, and nowhere is there a trace of stiffness or conventionally. Between the curtains closing the entrance to the room beyond falls a soft yellow light, and every now and then you hear a little musical tinkle, a snatch of aerial melody, that attracts your attention, and makes you wonder whence it comes. So you leave the luxurious library, and, parting the curtains, you walk through into the fairy-land beyond. At first you are conscious of nothing but the flood of yellow radiance that envelops you in its glory—dazzles and entrances you. Finally, you become aware that the whole room is cream-tinted, and that you are standing in just such an apartment as might have sheltered a belle of old Pompeii. Walls and ceiling are of palest cream, with festoons of roses in Pompeian pink, held up by queer figures, reproductions of ancient masks. The curtains are of lustreless silk of the same pale shade, and all the woodwork is like old ivory. In the corners stand four tall Roman lamps, each with four burners, and it is this steady blaze of unshaded gas, equally distributed, that gives the mellow yet intense radiance that fills the room. There is very little furniture here, a long sofa of antique design in wood like polished ivory, a cabinet and single chair of the same make, and two pianos—a grand and an upright, with stools and racks of white wood—are all you can see. Both instruments are open, and a glance at the music lying loose upon them is sufficient to show the musical creed of the hostess: opera scores, "Meistersinger, "Tristan," "Parsifal"—arrangements for two pianos, for pianos and violin, and so on *ad libitum*. Beethoven, Lizst and Chopin are also represented here, but undisputed lord of these domains is the Master of Bayreuth, whose strong face looks down from the top of the tall cabinet in the corner. On the upright stands a bust of Lizst, and on the mantel is a clock flanked by two vases, beautiful French work in black and gold, made from old Roman designs. Around the dial of the clock is a ring of Rhinestones, which makes a moving bit of brilliancy as it swings slowly back and forth. Again that musical tinkle, this time immediately behind you. You turn and see a door, on which hangs a queer shaped harp. Across the strings fall several wires, tipped with silver balls, and when the door is opened the balls strike the strings, producing a witching little melody. Behind this music room, one of the most beautiful of its kind in the city, comes the dining-room, which we cannot fail to admire, even after what we have just seen. It is an "early English" poem. The large, square window is all lozenge panes, as are the doors in the tall dresser, and the knobs on the doors are finished with miniatures on porcelain, buttons worn by gallants of earlier days, and collected by the lady of the house in her travels. Around the wall runs a frieze of priceless plates, gathered all over the world, and a great iron-bound antique linen chest fills you with admiration and envy, if you are antiquarian enough to appreciate its value. The upper floors are handsomely and tastefully furnished, but they are no different from what might be found in other wealthy homes, and cannot be compared in originality of beauty to the rooms below.—*Recorder.*

THE PRIMEVAL HORSE.

PREHISTORIC MAN AND THE HORSE IN NORTH AMERICA.

The genealogy of the horse has been most admirably worked out in various publications, and the fact has long been established that the genus originated on the North American continent. The question, however, as to whether prehistoric man in America had the horse as a contemporary has been a disputed point. This question may now be considered set at rest by the discovery of a skull of an extinct species of horse in strata with human implements. This discovery was announced by Prof. E. D. Cope, at the meeting of the American Association for the Advancement of Science, held in Washington in the month of August. A skull of a horse was exhibited to the members by Prof. Cope, who pointed out the characters of the teeth and who stated it would be impossible for any one to separate the fossil teeth from those of the quagga and zebra if the three were all thrown together. In minor characters, such as those of the size of the bones, the differences are perceptible. So there is no doubt the skull represents an animal different from any now living. That it was a horse, however, any one could see. The most curious thing about the skull was its condition. The frontal bone had been crushed in exactly as we see in the case of animals slaughtered for food. The friable bones protecting the eye sockets were intact, as were also the long nasal bones. Found in the same bed with the skull was a stone hammer that bore evident marks of having been fashioned by the hand of man. What inference was to be drawn from this? In the first place it has been suspected and considered probable that early man on this continent had been contemporaneous with a horse, though not the present living species, but no direct proof had hitherto been found. When Europeans landed on the new continent, the horse was an unknown animal to the natives. So it had evidently long been extinct. All the horses now found in either North or South America came from stock originally brought over by Europeans. But here we had evidence in the association of a human implement and a horse's skull that man and horse had lived together; and the peculiar fracture of the skull of the latter leads to the belief that the animal had met its death at the hands of man. This fact opens several questions. What became of the race of horses that once lived on the continent? Were they exterminated by savage man as civilized man has exterminated the bison? Did they once serve as beasts of burden or were they used only as food? Were they wild or domesticated? It seems probable that they were not used for any other purpose than as food, and that they existed only in a wild state, for it is scarcely reasonable to suppose that having once been used by man and so domesticated, their use would ever have been forgotten or the breed allowed to die out. Neither is it probable that they were exterminated solely by the agency of contemporaneous man, for we know that in spite of the use of the bison by the Indians of North America, their numbers did not decrease to any great extent. It was only when civilized (?) man began his destructive work that the bison began to disappear. What, then, was the cause of the disappearance of the horse? The age of the beds in which the remains are found is prior to the Ice Age that once prevailed in North America, and in this period of cold it is possible we have a factor to account for the extinction of the horse. The intense cold coming on forced the animals to migrate from their homes in the northwest of the United States, and retreating southward, they probably found many competitors for existence. The scanty vegetation of New Mexico, Arizona, and Northern Mexico probably did not suffice for the support of the great herds of animals coming from the north. New conditions of existence may have weakened the vitality of the species; starvation may have decimated their numbers; competition with other races must have cut off a large supply of food, and the hand of man may have hastened the struggle to its inevitable end. All we know, however, is that the race became extinct. That man lived previous to and of course during the Ice Age is now well established. That he lived at the same time with a species of horse if made known by the discovery of Prof. Cope. His influence in the extermination of many of the large mammals at one time inhabiting North America is as yet undetermined.—*Prof. Joseph F. James in Scientific American.*

GHOSTS AND VISIONS.

HYSTERIA A POTENT ALLY OF SUPERSTITION.

Excited nerves are one of the most annoying and most productive agencies for the breeding of unnecessary misery in the world. Most of us, probably, have had periods when vitality is at its ebb, and found a load on our shoulders which weighed upon both mind and spirits, with a sense of worry, a horror of other people's meddling, a feeling of self-mistrust, or the doom of some great evil upon our horizon. We conjure up visions of long forgotten blunders, and dwell upon them until they grow from mole hills into mountains; then the mistakes of yesterday—the sentences said or left unsaid, the deeds done or left undone—and there must be explanations and reversions immediately. Fortunately, with the bright cheerfulness of the sunshine, with the busy activity of the occupied life, comes the calming memory that we are morbid, possibly dyspeptic; that for a short period our nerves have been painfully excited, and, the predisposing cause being removed, the normal condition again prevails, and we are at peace. But there are people so constituted that their entire lives are passed in this febrile condition; and such a condition of mind may be classed as one of the misfortunes of life. It breaks up all the peace of domestic life, and wrecks the happiness and fortunes of many. Very trying such people are; they are not at peace themselves, and they are pre-determined not to let others enjoy any quiet which they have the power to destroy. These spells of morbid fancies and unbid depressions visit men and women alike, so far as we can judge; but in all literatures and times past, when it comes to pure, unreasoning worrying, active suffering, selfish teasing, women have been given the preëminence. Not that all women, or any considera-

ble number of women, suffer in this manner, but a certain hysterical temperament is subject to such fits. Considering the predisposing causes, it would seem that the controlling power, which could check such a state in its earlier stages, at least, is more at fault than the active agent. A yielding and uxurious husband is commonly the foil for breeding this sort of tyranny. The nervous fancies should be controlled, and, when beyond the patient's power, to have some one who should be master, but is not, allows the disorders to grow to undue proportions. As an instance, Queen Constance, who, by her great griefs, and without controlling power of any kind, became heroic in her selfish agony, has made herself the type of this form of hysteria. Self was the center of all her wailings, not Arthur's unhappiness. It is to nerves so painfully excited and imagination so diseased that the outgrowth of ghosts and superstitious visitations is, undoubtedly, often due. In this state of mind and after some severe nervous shocks — as the loss of some near friend — the latent ideas entertained by the individual as to spiritual agencies, ghosts, and visions have much to do with such phenomena. To a believer in ghosts, any apparition, sound, or startling coincidence will be accredited with a supernatural origin in the mind of the observer, and he usually accepts the data as a fact, and makes no inquiries which might enlighten him on the purely natural cause for the phenomenon. There was an instance which seemed to be attested by so many persons, that it was difficult to believe so many could be subject to a delusion in the matter. An artist was sketching on one of the bold promontories of the many fantastically shaped mounds in south-eastern Kansas, and late in the evening descended to the valley to find several families in a state of nervous excitement, each person testifying to the warning given by the appearance of a ghost. It appeared and disappeared above the the outline of the ridge of the high mound where the artist had been working for hours. A great billowy object, resembling the distended skirts of a woman, had been seen to rise above the horizon, and then to sink down and disappear, only to show itself at some other point—now higher up nearer the summit of the mound, and then away down the side. The fact that the object sank down clear out of sight and then reappeared, only caused the greater excitement. It was thought to be the ghost of an early settler, who had been murdered during the border troubles of the early settling of the State; and, as her grave was on the highest point on the mound, it was prophesied that she had visited the scene of her earthly suffering to give warning to those now living near the site of some pending disaster. Under the conditions, excitement ran high: and it was noticeable that most of those present were prepared to be deceived, and more than one was vibrating in nervous tremors, and occupied the time in relating stories of second sight, goblins, and ghosts. One of the company, the unmarried sister of the hostess, who was quite ill, had an attack of hysteria, and the prolonged shrieks sounded lugubrious and added to the predisposition to expect something horrible. The house stilled down, however, and when the cheerful sunshine of a brilliant July day awakened all to a state of healthy, happy activity, it seemed quite improbable that anything supernatural would show itself. But the early breeze, which usually begins to blow soon after sunrise and increases in intensity as the day grows warmer, seemed to stir the ghost from its haunts. Peter, the ploughman, who, after breakfast, had gone happily to his work, forgetful of the tremors of yesterday, came to the house with a blanched face, bringing his team, protesting against being in the field when "that thar ghost war on the rise." The poor hysterical patient was again in agony, and the artist, finding no one else equal to the task of investigation, started for the mound. Her white canvas umbrella, which had been staked on the top of the bluff for some days, had escaped its fastenings, but was held by the cord tied at the outer edge and secured to a stake to steady it in high winds. It had been swept to and fro by the breeze, and its gyrations could be seen from the valley. So the ghost was laid, but not the hysteria. In the mining regions of Missouri there was at one time an epidemic of fits, originating in a religious excitement where many converts were violently agitated, and, after hours of violent excitation, became stiff and stark, lying in a trance state. The report grew that a certain large oak tree, standing at the fountain-head of Roaring river, was burning, although no flame was to be seen, but great columns of smoke ascended from the green boughs during certain hours of the day. Soon many invalids were attracted, and, as there was no visible cause for fire, great wonder fell upon them. And the excitement grew and the frenzy prevailed, until one bold investigator climbed to the topmost branch. The enigma was solved. Innumerable myriads of gnats were swarming, and, as they disported themselves in the sunshine, the great spirals and clouds of smoke, black and rushing, seemed to issue from the tree. The great emotional wave, however, had its full tide. Of the many indefinite distresses to which human nature is subject, there is none more real than that aroused by unexplained natural phenomena and the consequent fright. The result is known by many names: nerves, spleen, vapors, megrims, ennui, and last and most expressive name, because always applicable—hysteria.—*Pop. Science News.*

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

October.

MEATS.—Beef, mutton, ham, kidneys, liver, venison, sausage.

GAME AND POULTRY.—Pigeon, chicken, duck, woodcock, brant, grouse, partridge, rabbit, snipe, goose.

FISH.—Bass, blackfish, bluefish, clams, cod, crabs, eels, carp, catfish, flounder, halibut, herrings, lobster, mackerel, mussels, oysters, pike, porgie, prawn, rockfish, salmon, sea bass, sturgeon, smelt, turtle, white fish, whiting.

VEGETABLES.—Artichokes, beets, beans, broccoli, Brussels sprouts, cabbage, carrots, cauliflower, corn, cucumbers, egg-plant, garlic, lettuce, onions, parsley, parsnips, potatoes, radishes, rhubarb, savoy, shallots, spinach, squash, tomatoes, turnips, watercress.

FRUITS.—Apples, bananas, blackberries, grapes, melons, oranges, peaches, pears, pineapples.

PRACTICAL RECIPES.

BAKED POTATOES.—Select medium sized potatoes and wash them carefully, butter the skin all over, lay them in a pan and bake in a hot oven. They should come from the oven a very delicate brown.

LOBSTER MAYONNAISE SANDWICH.—Boil your lobster and pick or chop it up very fine, make a rich mayonnaise dressing and mix the lobster with it and put it between layers of bread.

SARDINE SANDWICHES.—Drain the oil from a box of sardines and lay them on soft paper to absorb the oil, remove the bones and chop the fish up very fine, add to them the juice of a small lemon, a dessert spoonful of melted butter, a little cayenne pepper and salt, mix very thoroughly together. Spread this paste on a thin slice of bread, and put another slice on top.

TO PRESERVE LEMONS.—Varnish them with a solution of shallac in spirits of wine, and they will keep fresh a long time.

ALMOND PASTE.—Scald your almonds and remove the skin and pound them well in a mortar until they are fine, moistening them frequently with the white of an egg whipped up with orange flower water, which will keep them from turning to oil. When the paste is very smooth spread it out on a dish and dry it with fine sugar until it becomes pliable. Let it lie a while before using.

COFFEE CAKE.—Four eggs, two cupfuls sugar, one cupful butter, one cupful molasses, five cupfuls flour, one cupful very strong coffee, one teaspoonful cinnamon, one teaspoonful cloves, one nutmeg, one very scant teaspoonful soda, two cupfuls boiled cider or one cupful mild vinegar sweetened, one pound stoned raisins.

WALNUT CAKE.—One and one-half cupfuls sugar, one and one-half cupfuls butter, two-third cupfuls sweet milk, whites four eggs, two cupfuls flour, two teaspoonfuls baking powder, two-third cupful walnuts, two-third cupfuls raisins.

HICKORY NUT CAKES.—Two third cupfuls butter, two cupfuls sugar, two and one-half cupfuls flour, one cupful sweet milk, one teaspoonful baking powder, four eggs, two cupfuls hickory nut meats. Paper your pans and drop the batter on with a table-spoon forming small round cakes.

CHESS PIE.—Three eggs, two-third cupful sugar, one half cupful butter. Beat butter to a cream, add yolks and sugar beaten to a froth with a little vanilla. Stir all together and bake in one crust. When done spread with the beaten whites and three table-spoonfuls of sugar and a little flavoring. Return to oven and brown. Serve immediately.

CHARACTERISTICS OF PLANETS.—Mercury is the nearest to the sun. Venus is almost the same size as the earth and rotates on her axis in nearly the same number of hours. Mars is smaller than the earth, has two moons and is most like it as regards possibilities of habitation; water and land are equally divided on Mars, and the poles of the planet are icebound. Jupiter, the giant planet, is 1,230 times as large as the earth and has four moons. Saturn has a gorgeous system of rings which completely surround it, and in this respect is unlike any other planet. Uranus is seventy-four times as large as the earth and has four moons. Neptune has one moon, is 105 times as large as the earth and is the furthest planet from the sun yet discovered.

ELECTRIFIED ICE CREAM.—A new experience of the danger of electricity has to be recorded. Dr George S Hull recently conducted some experiments with ice-cream freezers, and he finds that galvanic action takes place, which results in the introduction of poisonous salts of copper and zinc into the cream. It appears that the freezer and the paddle are generally made of dissimilar metals, and the cream, especially if mixed with fruit or other acid, or even saline substances, forms an electrolyte, which naturally completes the necessary conditions for galvanic action. With galvanic action there is, of course, chemical action, resulting in the formation of salts of zinc and copper, which become mixed with the cream. Dr. Hull has probably discovered the cause of many mysterious cases of poisoning which have followed the consumption of ice cream. The remedy, however, seems very simple; if the freezer and the mixer were made of the same metal, no galvanic action could take place.

DESIRABLE DEVICE.—A common source of cold and discomfort in winter is the draught from the bottom of a shrunken or badly fitting door. A device has been brought out by which these currents of air can be so diverted as to be made desirable instead of objectionable. A slab of wood works on two pivot hooks projecting from the bottom of the door, and fitted at one end with a curved piece of wood, which comes against the jamb on closing the door and presses a felt-facing close to the door. On opening the door an India rubber spring draws the bottom of the slab toward the door, and so clears the carpet. The bottom edge of the slab, being lined with felt, is absolutely draught-tight. On the door being shut the air which rushes in strikes against the slab, is turned upward, and goes to the top of the room. In this way the draught under the door, which was before a constant menace to the health of the occupants of the room, becomes a positive advantage in promoting the thorough ventilation of the apartment.

BUSINESS NOTES.

HORSFORD'S ACID PHOSPHATE.

A brain and nerve food, for lecturers, teachers, students, clergymen, lawyers, and brain-workers generally. Dr. I. R. Sanford, Sheffield, Mass., says: "Most excellent in derangements of the nervous system, such as headache and sleeplessness."

A RISING WESTERN CITY.

PART 2.

But it must not be forgotten that Watertown is already a city of the finest buildings in the State, a city of great wealth and prosperity, a city of manufacturing institutions, wholesale houses, motor lines, lighted by gas and electric lights, a city of beautiful residences, churches, streets, parks, avenues and drives, magnificent school buildings, hotels and mercantile houses. A banquet was given on the 18th of last June to a delegation of New England gentlemen by the citizens of Watertown, and the address of welcome was delivered by Hon. E. C. Mellette, Governor of South Dakota. The Governor's speech was replied to by one of the party, who took for his toast, "The Three Dakotas—the Past, Present and Future." The following extracts from his speech will give the reader an idea of the Wealth of this New World. Governor Mellette, Ladies and Gentlemen: "I poorly express the feelings of my associates and myself when I say that we are glad to meet in these splendid Dakotas so many prosperous and happy men and women. * * * Think for a moment what you have: South Dakota, geographically speaking, is an empire herself, her head in the Rockies, jeweled and bedecked in ice and snow, her feet in the rich warm valley of the Sioux adorned with summer harvests and fragrant with prairie roses South Dakota is a country capable of producing from her soil everything necessary for the comfort and blessing of human life. Twelve years ago a population of 30,000 inhabitants, and most of these tenting on the plains, to-day a population of 450,000 men, women and children in comfortable homes, surrounded by plenty, happy, contented, and growing rich. Thirteen years ago not a white man within 125 miles of where I stand; to-day a beautiful city, rising, as by magic, from the lap of your lakes, and from your virgin and verdant soil. Think of it, the infant State of America yielding 22,000,000 bushels in wheat, 10,000,000 bushels of oats, 4,000,000 of barley; 5,000,000 of flaxseed, 25,000,000 bushels of corn, 3 000,000 bushels of potatoes, lesser vegetables in proportion, 10,000,000 pounds of wool, 5,000,000 head of horses, cattle, sheep and hogs. The indications now are that your harvests this year will be double what they ever have been. The picture is nothing less than a transformation scene, yesterday a wild prairie roamed over by the Indian and the coyote, to-day a rich and prosperous field inhabited by the best civilization of the western world. You have a great system of railways, and to reproduce them would cost upward of $210,000,000. You are connected directly by your railroads, with Duluth on the north, Minneapolis and St Paul on the east, Chicago southeast, Omaha south, the sheep prairies of Wyoming southwest. Bismarck, the Northern Pacific, with its tributaries northwest, and the Black Hills, the centre of American tin and the centre of many of the largest gold and silver mines in the country, in the West. So peculiar is your railroad competition that you can ship your products to the eastern States and Europe as cheap as they can be shipped from Minneapolis, though you are 226 miles west of Minneapolis. When such great railroad corporations as the Chicago and Northwestern, the Rock Island, the Minneapolis, Manitoba & Northern, kings of travel and trade, pounce down upon your town, it means that you have something worth having; it means that you are to have a city which will direct the trade of the Northwest, a city of mills and factories sufficient to take care of your grain and fibre—woollen mills for your wool, linen mills for your flax, strawboard mills for the million tons of straw you annually waste; shoe factories for your hides, starch factories for your potatoes, sugar mills for your beets; it means mills to manufacture the products you grow as you grow them, instead of freighting them 2,000 miles east to be manufactured and then shipping the manufactured goods back to you. Why should not Watertown become a great city? Your climate alone should induce thousands to visit your city every summer and autumn; your lakes, your fields and landscapes, thousands more. Statistics show that where the death rate throughout the United States is 160, the death rate in South Dakota is but 66. No pestilence or scourge has ever visited your fair shores, nor has malaria, the curse of many western and southern States, ever by its poisonous breath, affected one of your homes—a country of vigor in its brain, health in its bosom, and energy at its feet. In a word, South Dakota is the most healthy northern climate on this continent." * * * * * * The boom has struck the city; people are arriving on every train from all sections of the world; work is progressing of every nature, and here and there streets and parks are being made. I understand an excursion will leave Boston, September 29, for this city, under the auspices of Raymond & Whitcomb. This will be a great opportunity for New Englanders to visit this land of wealth and beauty, of golden sun and Indian summer—the most beautiful country in the great Northwest. South Dakota will sell upwards of $100,000,000 of produce this year, While writing from the observatory on Capital Hill, I see five trains departing and four arriving; I see thousands of stacks of grain in all directions, and long lines of wagons over nine roads, hauling the products of the season; I hear the sportsman's gun as he pursues the trail of the wild chicken; the motor cars are filled with excursionists, picnicking on the shores of the lake; I can see for forty miles in every direction, and as far as the eye can reach is a great harvest of wealth. The finest hotel in the State is the Arcade Hotel, the finest business block the Granite block, the finest school building the High School, all of Watertown. There are more pretty women in Watertown than I have ever seen in any town of its size, except Paris, Ky. It is a city of schools and churches, and educational attainments rank high.—*Boston Herald.*

A Tonic

Horsford's Acid Phosphate.

A most excellant and agreeable tonic and appetizer. It nourishes and invigorates the tired brain and body, imparts renewed energy and vitality, and enlivens the functions.

Dr. EPHRAIM BATEMAN, Cedarville, N. J., sasy:

"I have used it for several years, not only in my practice, but in my own individual case, and consider it under all circumstances one of the best nerve tonics that we possess. For mental exhaustion or overwork it gives renewed strength and vigor to the entire system."

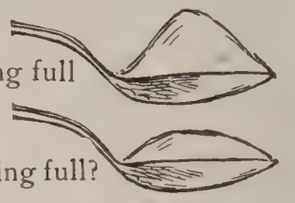
Descriptive pamphlet free.

Rumford Chemical Works, Providence, R. I.

Beware of Substitutes and Imitations.

CAUTION:—Be sure the word "Horsford's" is on the label. All others are spurious. Never sold in bulk.

Is a spoonful a spoon



heaping full

or

rounding full?

One rounded teaspoonful of Cleveland's Baking Powder does as much work as a heaping teaspoonful of others; quite a saving on a year's bakings.

Cleveland's leavens *most* and leavens best. Try it.

EVERY one in need of information on the subject of advertising will do well to obtain a copy of "Book for Advertisers," 368 pages, price one dollar. Mailed, postage paid, on receipt of price. Contains a careful compilation from the American Newspaper Directory of all the best papers and class journals; gives the circulation rating of every one, and a good deal of information about rates and other matters pertaining to the business of advertising. Address

ROWELL'S ADVERTISING BUREAU,
10 Spruce St., New York.

Fine Table Wines

From our Celebrated Orleans Vineyard.

Arpad Haraszthy & Co.

Producers of the

ECLIPSE

CHAMPAGNE,

530 Washington St.

SAN FRANCISCO.

GENERAL AGENCIES:

NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOSEPH R. PEEBLES' SONS CO., 73 West Fourth Street.
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.

PURE PEPSIN

In Powder and Scale.

MANUFACTURED BY

ARMOUR & COMPANY, Chicago.

Guaranteed free from adulteration or make-weights; of excellent physical properties and high digestive power.

Under similar conditions, **ARMOUR'S PEPSIN** will exhibit greater activity than any other pepsin now before the profession.

The Manufacturers will be pleased to supply members of the Medical Profession with samples of their Pepsin, and with full details regarding digestive strength, if desired.

GOLD MEDAL, PARIS, 1878.



W. BAKER & Co.'s Breakfast Cocoa

from which the excess of oil has been removed,

Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

HAMMOND'S

CELEBRATED

Calumet Oleomargarine

Strictly pure, cheap and healthful.

Ask your grocer for it.

Put up in packages of all sizes, also prints and rolls.

C. H. HAMMOND CO.,

607 to 615 THE ROOKERY,

CHICAGO.

Also offices at Boston, South Omaha, Neb., and Hammond, Ind.

WATERTOWN, South Dakota.

A NATURAL centre and distributing point. The following extracts from a response to an address of welcome from Governor Millette, of South Dakota, to a party of Boston business men, presents a vivid picture of the resources of South Dakota, and the future of its destined capital.

"South Dakota, geographically speaking, is an empire herself, her head in the Rockies, jewelled and bedecked in ice and snow, her feet in the rich, warm valley of the Sioux, adorned with summer harvests and fragrant with prairie roses. South Dakota is a country capable of producing from her soil everything necessary for the comfort and the blessing of the human life."

Thirteen years ago not a white man within 125 miles of where I stand; to-day a beautiful city rising, as by magic, from the lap of your lakes and from your virgin and verdant soil.

Everything about your town suggests business and social permanency; your public buildings, your mercantile houses, your pretty homes, your water-works, your electric light and gas plants, your motor lines, are what we might expect to see in a city of 50,000 inhabitants.



CODINGTON CO. COURT HOUSE, WATERTOWN.

While you have done nothing to boom WATERTOWN, but have quietly builded your homes, made beautiful your streets, your parks, and your drives, the wealth of your surroundings and the natural laws of trade and enterprise have done much for you.

GRANITE BLOCK, WATERTOWN.



Your country has been settled by stalwart and industrious farmers, who are rapidly making your rich Sioux valley, which for richness of soil equals Aguas Alientes of Mexico, and vies with the Nile and the Ganges, a country of incalculable wealth and of great beauty. Think of it, the infant State of America, yielding 22,000,000 bushels of wheat, 10,000,000 bushels of oats, 4,000,000 bushels of barley, 5,000,000 bushels of flaxseed, 25,000,000 bushels of corn, 3 000,000 bushels of potatoes, lesser vegetables in proportion, 10,000,000 pounds of wool, 5,000,000 head of horses, cattle, sheep and hogs.

You have a great system of railways, and to reproduce them would cost upwards of $210,000,000. You are connected directly by your railroads with Duluth on the north, Minneapolis and St. Paul on the east, Chicago southeast, Omaha south, the sheep prairies of Wyoming southwest, Bismarck, the Northern Pacific, with its tributaries, northwest, and the Black Hills, the centre of American tin, and the centre of many of the largest gold and silver mines in the country, in the west. So peculiar is your railroad competition that you can ship your products to the East and Europe as cheap as they can be shipped from Minneapolis, though you are 226 miles farther west.

When such great railroad corporations as the Chicago and Northwestern, the Rock Island, the Minneapolis, Manitoba and Northern, kings of travel and trade, pounce down upon your town, it means that you have something worth having; it means that you are to have a city which will direct the trade of the Northwest; a city of mills and factories sufficient to take care of your grain and fibre—woolen mills for your wool, linen mills for your flax, strawboard mills for the million tons of straw you annually waste; shoe factories for your hides, starch factories for your potatoes, sugar mills for your beets; it means mills to manufacture the products you grow as you grow them, instead of freighting them 2,000 miles east to be manufactured and then shipping the manufactured goods back to you.

SCENE ON A SOUTH DAKOTA STOCK FARM, NEAR WATERTOWN.





DENVER has become a great city, long since the pride of Colorado, but her mountains made her great.
OMAHA, the glory of Nebraska, but her prairies made her glorious.
WICHITA, the wonder of the South, but her railroads made her famous; but

WATERTOWN

has the RAILROADS of Wichita, the PRAIRIES of Omaha, and the MOUNTAINS of Denver, EACH and ALL contributing to her FUTURE GROWTH.

MAPS AND ILLUSTRATED PAMPHLETS, giving full statistical details, and describing the Lands for sale adapted for Residences, Business, Manufacturing or Agricultural purposes, sent **Free to any Address.** Apply at the offices of the

WATERTOWN LAND AND IMPROVEMENT CO., Equitable Building, Boston, Mass.

CONFEDERATE MONEY.

Warranted Genuine and in Good Condition.

We are extensive dealers in Confederate Money—rare relics of our late civil war; also Bullets, Cannon Balls, etc. We want agents in every city North to sell these mementoes, and we will pay agents handsomely to sell our goods. We will furnish the money to those desiring at the following retail prices: Shinplasters, 10, 25, 50 and 75 cents each, or the entire set 50 cents. Complete sets, consisting of $100, $50, $20, $10, $5, $2, $1, 50c., $1 per set. $500 bills, $2 50 each. $100 bills, 15 cents, or two for 25 cents. $50 bills, 10 cents, or two for 15 cents. $5 and $20, 5 cents each. 50c., $1 and $2, 25 cents each. Inquirers enclose stamp for reply.

Publishers of SOUTHERN AGENT, Atlanta, Ga.

LITTLE BOYS AND GIRLS

MAKE EASILY $2 A DAY.

Write for particulars. Address

BARKER PUBLISHING COMPANY, Atlanta, Ga.





PUBLICATIONS OF THE

ANALYST PUBLISHING CO.

THE AMERICAN ANALYST.
Weekly. Every Thursday. $1 per year.

THE ROOFER, TINNER AND SHEET-IRON WORKER.
Monthly. 15th each month, $1 per year.

THE LEATHER MANUFACTURER.
Monthly. 1st each month. $3 per year.

Reliable agents and representatives wanted everywhere on liberal terms. Address

ANALYST PUBLISHING CO.
19 PARK PLACE, NEW YORK.

IF you wish to advertise anything anywhere at any time write to
GEO. P. ROWELL & CO.,
No. 10 Spruce St., New York.

"BILLET"

are

Carefully Selected

French Sardines,

Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS.

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,

HOWARD STREET. BOSTON, MASS.

HARTSHORN'S SELF-ACTING SHADE ROLLERS

NOTICE SCRIPT NAME OF Stewart Hartshorn ON LABEL, AND GET THE GENUINE HARTSHORN

25c. THE DAISY STAMPING OUTFIT. 25c.

STAMPING BY AN ENTIRELY NEW PROCESS. No more ironing or cleaning of patterns, no powder to use. Our Outfit has **OVER FIFTY NEW DESIGNS**—Children, Birds, Animals, Flowers, Leaves, Ferns and Mottoes in great variety; Borders in rich styles, and a complete Alphabet, together with a bottle of **STAMPING FLUID,** which makes an instantaneous impression, and is absolutely certain, cleanly and easy to use. Every lady can do her own stamping at home. **GREATEST BARGAIN EVER OFFERED.** No other outfit has this Patent Fluid. Designs **SUPERIOR** to many outfits sold for $1.00. We will sell this wonderful Outfit. for a short time only, at **25c. POSTPAID** to advertise our other goods. Send at once. We fill orders promptly. Address

EUREKA MANUFACTURING CO., Hinsdale, Ills.

LADY AGENTS WANTED.

I have a medical specialty for ladies use, which is one of the best selling articles in the country. You can make a good income handling it, and at the same time be doing your sex a great benefit. Write me at once for full information and exclusive territory. If you wish a sample sent enclose 12 cents postage. Dr. H. H. Jackson, 103 State Street, Chicago.

We can save you Fifty Dollars when you Build. See



A complete set of Plans to build from, simply state about price of dwelling desired. 25 cts. in stamps. Our book "Beautiful Homes." 25 cts. Our monthly book "The National Builder," 25 cts. Address

The National Builder, Adams Exp. Bldg., Chicago, Ill.

THE QUEEN'S PRIZE SCHOOL OF HISTORY.

About two years ago the publishers of THE CANADIAN QUEEN added what has proven to be a very popular and successful feature to their publication in establishing their Prize History School. It has offered competitive examinations in English, Canadian and American History, giving valuable rewards to those making the most correct answers. During this time there have been added the names of over forty thousand new subscribers to their books. Rewards have been made by THE QUEEN which have cost them in cash over ten thousand dollars. THE QUEEN'S Prize School of History has received the sanction and support of the clergy, press, and, in fact, of the best people of the Dominion of Canada. The following, taken from a leading daily newspaper, expresses an opinion which is universal:

A HANDSOME PRIZE.

AN EVIDENCE OF WHAT A GENUINE MAGAZINE COMPETITION OFFERS.

"On Friday there arrived from Toronto, for Miss M. Hora, a handsome Shetland pony, harness and cart, being the first award in the Royal Quilt Competition of THE CANADIAN QUEEN magazine. It attests the genuine nature of the magazine's contests by its excellent condition and value. THE QUEEN has frequent competitions and has made innumerable awards, displaying a generosity quite surprising to those who have had experience of the limited field for Canadian journalistic enterprise. But THE QUEEN has been a success as a business venture from the start, and is growing in literary excellence steadily. It covers the field of fashion, as well as light reading; talks to the household, the young, and, indeed, all home classes. The competitions have been used to assist the introduction of the magazine, for where it is introduced it is quite certain to remain a monthly guest. The leading prizes have been made, as instance this latest to Kingston, while many smaller prizes have rewarded the moderately successful among competitors. THE CANADIAN QUEEN is truly royal in its ways."—*The (Kingston, Ont.) Daily British Whig*, June 27th, 1891.

QUESTIONS IN AMERICAN HISTORY.

1.—Give the names of the early navigators who it is claimed by historians first discovered America.

2.—From whom has America taken its name?

3.—What class and nationality first settled Virginia? New York? Massachusetts? Pennsylvania? Maryland?

4.—What action did the Continental Congress of 1774 take and what was the result of that action?

5.—What was the first battle fought in the War of the Revolution?

6.—What nation rendered the Americans great assistance in the War of the Revolution?

7.—Give the names of the committee appointed to draft the famous Declaration of Independence.

8.—What was the date of the signing of the United States Constitution?

9.—After becoming a nation and before the great Civil War, what were the principal conflicts which engaged the Americans?

10.—What was the direct cause of the Civil War? What Generals of the Northern Army have occupied executive positions under the Federal Government since the closing of the War? Who was Commander-in-Chief and who were the principal Generals of the Confederate Army during the struggle?

11.—How long did this War last and what is the computed loss of life?

12.—What can be said to day of the United States as a nation?

To the *First* gentleman sending the correct answers to the above questions in American History the publishers of THE QUEEN will present "**Majestic**" acknowledged the **Handsomest and Finest Riding Horse in Ontario.** ("Majestic" is sixteen hands high, thoroughbred, seven years old, and valued at $350.00.) To the *First* lady the publishers of THE QUEEN will present an elegant **Jacket of Genuine Alaska Seal** to be made according to the measurement supplied by the winner. To the *First* boy under sixteen years of age the publishers of THE QUEEN will present a **Little Giant Safety Bicycle** valued at $75.00. To the *First* girl under sixteen years of age the publishers of THE QUEEN will present an elegant **Music Box,** playing twenty tunes, finely finished and valued at $55.00.

To the gentleman from whom the *Last* correct answers are received before the close of this Competition, the publishers of THE QUEEN will present a **First Cabin Passage to Europe and Return** and **$200 in Gold** for expenses. This trip can be taken by the winner any time before October 1st, 1892. To the lady from whom the *Last* correct answers are received before the close of this Competiton the publishers of THE QUEEN will present a **Pony, Cart and Harness.** To the boy under sixteen years of age from whom the *Last* correct answers are received before the close of this Competition the publishers of THE QUEEN will present a **Solid Gold Watch** containing one of the best American movements, and valued at $75.00. To the girl under sixteen years of age from whom the *Last* correct answers are received before the close of this Competition the publishers of THE QUEEN will present an elegant **Solid Gold Watch,** containing one of the best American movements, and valued at $65.00.

ADDITIONAL PRIZES IN ORDER OF MERIT: Silver Tea Services, Ladies' Gold Watches, Silk Dress Patterns, French Mantel Clocks, Portiere Curtains, Toilet Cases, Manicure Sets, and many other useful and valuable articles.

The object of the publishers in offering these liberal prizes is to introduce THE QUEEN Magazine into **new** homes. Answers must be mailed *on or before* November 10th, 1891, and must be accompanied by $1.00 for one year's subscription to THE CANADIAN QUEEN. Prizes awarded to subscribers residing in the United States will be shipped to them **free of duty.** The distribution of awards is in the hands of disinterested persons, and decisions will be based on the correctness of answers. Use your own language in wording the answers. No corrections can be made after your answers are mailed. THE QUEEN is a large, forty-eight page family magazine, especially interesting to ladies and children, and visits regularly **over one hundred thousand of the best homes** in Canada and the United States. The awards in THE QUEEN'S Prize School of History are made strictly with regard to merit, without partiality to persons or locality. The decisions must be accepted as final. If you have never seen a copy of THE QUEEN send six U. S. two cent stamps and receive a late number, post paid, containing letters from those who have received rewards in previous contests.

Address THE CANADIAN QUEEN, PRIZE SCHOOL OF HISTORY, 58 BAY STREET, TORONTO, CANADA.

TABASCO PEPPER SAUCE,

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced by connoisseurs to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY'S SON,

NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

NATRONA BI-CARBONATE OF SODA.

ABSOLUTELY PURE.)

The nature of the raw material from which NATRONA BI-CARBONATE OF SODA is made—viz., kryolith, a mineral containing *pure sodium*—insures a purity and uniformity of product which cannot be obtained from any other known material. In making BI-CARB. SODA from any other raw material, the use of sulphuric acid is a necessity, but none is used in any part of the process of making NATRONA BI-CARB.; hence its entire freedom from the slightest trace of arsenic, which is always present in ordinary soda. Its absolute purity and entire freedom from all traces of *sulphate of soda*, common salt and other impurities, render NATRONA BI-CARB. NEARLY TASTELESS, and being bolted through the finest bolting-cloth, insures the finest stage of division.

To these indisputable facts the attention of CONSUMERS of soda is specially called. They are IMPORTANT, and should influence both those who use and those who sell soda, to buy and sell NONE BUT THE BEST.

The NATRONA BI-CARB. Soda is kept in stock by almost every wholesale druggist and grocer throughout the United States, of whom it may be ordered.

Natrona Bi-Carb. Soda is unequaled by any other brand of English or American Manufacture.

PENNA. SALT MANUFACTURING CO.,

NATRONA CHEMICAL WORKS. PHILADELPHIA, PA.

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

ARROWHEAD HOT SPRINGS,

CALIFORNIA.

I MOST respectfully invite physicians of the East to write to me for information concerning this famous Southern California resort. The hot mineral water and mud, and the climate are unequalled in America. Diseases of the throat, lungs, liver, stomach and kidneys, nervous and skin troubles and rheumatism, are the ailments successfully treated. The hotel contains 125 rooms, is first-class, and lighted throughout with incandescent lights. Elevation 2.000 feet. Address,

H. C. ROYER, M. D.,

Arrowhead Springs, San Bernardino Co., California.

DETECTIVE! WE WANT A MAN IN every locality to act as **Private Detective** under our instructions. Send stamp for particulars.

WASHINGTON DETECTIVE AGENCY,
Box 787. Washington, Iowa.

HAY FEVER For the cause, (Not Cure), which is **preventable. Sufferers only** address

THEODORE RUE, Box 199, BEVERLY, N. J.

GOITRE, or THICK NECK.

I have a positive, speedy, cleanly, harmless and almost inexpensive cure. Come or write to me at 28 Arlington Court, CLEVELAND, Ohio. It is no iodine smear. Cure made permanent.

Dr. J. CASKEY.



RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R W ROBINSON & SON,

184 Greenwich St., N. Y

DO YOU KNOW THE DANGER OF USING SOAP?

We do not mean soap made from proper material; and when we tell you that about ninety-nine per cent. of Toilet Soap is made from refuse fats gathered from tenement houses, hospitals, butcher shops, and from cattle dying of disease or during transportation, you will, we believe stop and think. Putrefactive changes have taken place in most of this material, as it is mixed with lean meat, blood, bones, sinews, etc. There is at least *one* soap that is made wholly from vegetable material—OLIVE and PALM OILS—and that is

VELVET SKIN SOAP.

It will keep the skin soft and in a healthy condition, as no animal fats are used in its manufacture. Nothing in one's personal outfit is quite so satisfactory as a thoroughly reliable Toilet Soap. We are confident that a trial of this article will insure its continued use. If the dealer does not keep it, do not take any other, but require him to order it for you, which he can do readily. **Otherwise, send to us direct.**

MANUFACTURED BY

REED & CARNRICK, Manufacturing Chemists,

447 GREENWICH STREET, NEW YORK.



A HIGH-GRADE PIANO

AT A VERY MODERATE PRICE.

NEW DESIGNS. FANCY WOODS.

Terms Easy. + Monthly Instalments.

TWO, THREE AND FOUR PEDALS.

Catalogues, Prices, Terms, Etc., sent to any address.

EVERY PIANO WARRANTED 5 YEARS.

(Mention this Paper.)

THE LABORATORY.

To Inventors, Manufacturers and Applicants for Patents

The AMERICAN ANALYST may be consulted upon all matters involving theoretical or applied chemistry. Advice and opinions given. Analyses and assays made. Patents perfected and secured. Terms reasonable.

Address, AMERICAN ANALYST,
10 Park Place, N. Y.

SWIFT'S

CHOICE

Chicago Dressed Beef

AND

MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,

UNION STOCK YARDS,

CHICAGO, ILLS.

THE ORIGINAL AND GENUINE
(WORCESTERSHIRE SAUCE).



LEA & PERRINS' SAUCE

In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—

Lea & Perrins

Beware of Imitations; see that you get Lea & Perrins'

For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS. NEW YORK.

GLENN'S SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original and Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,

C. N. CRITTENTON,

115 FULTON STREET,

NEW YORK.

WHAT A DIME WILL DO!

Every BOY and GIRL who loves to read splendid Stories, Sketches and beautiful Poems, should subscribe for the AMERICAN YOUNG FOLKS, a beautiful Illustrated Monthly Magazine, established in 1875. Its stories are the Very Best that can be obtained from the Foremost Writers of Juvenile Literature, and every issue is filled with good things. The regular subscription price is $1.00 a year, but if you will **Cut this out** and return it to us with **a Silver Dime** and your name and address, we will send you the Magazine Six Months on Trial. Address,

AMERICAN YOUNG FOLKS, Manchester, N. H.

The Standard of Excellence.

KINGSFORD'S

OSWEGO

Pure and Silver Gloss



STARCH

KINGSFORD'S

OSWEGO CORN STARCH

FOR

Puddings, Custards, Blanc-Mange, Etc.

THE PERFECTION OF QUALITY.

WILL PLEASE YOU EVERY TIME.

Always ask your Grocer for these goods.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 41. NEW YORK, THURSDAY, OCTOBER 8, 1891. WHOLE No. 241

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - $1.00 per year.
Single Copies, - - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.
Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.
Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,
H. LASSING, M. D., T. P. McELRATH, *Editors.*
No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

Bright Stories 484
A Mysterious Guest
Darwin Criticised 483
Domestic Dietetics 485
Editorials 481
Let Children Sleep; Aerial Navigation; The Speed of Cannon Balls.
Food and Sleep 483
Giant Sloths 482
Nature's Remedy 486
Table Contrasts 485
Unheard Sounds 482

LET CHILDREN SLEEP.

A plea in behalf of giving more sleep than is customarily allowed to the young has been set in circulation through the newspapers of Germany by a physician who erroneously enough is named Dr. Cold, despite the evidence he gives of being warm-hearted. A healthy infant, he says, sleeps most of the time during the first weeks; and in the early years, people are disposed to let children sleep as much as they will. But from six or seven, when school begins, there is a complete change. At the age of ten or eleven, the child sleeps only eight or nine hours, when he needs at least ten or eleven, and as he grows older the time of rest is shortened. Dr. Cold believes that, up to twenty, a youth needs nine hours' sleep and an adult should have eight or nine. With insufficient sleep, the nervous system, and brain especially, not resting enough, and ceasing to work normally, we find exhaustion, excitability, and intellectual disorders gradually taking the place of love of work, general well-being, and spirit of initiative.

AERIAL NAVIGATION.

The subject of aerial navigation has exercised men's minds for centuries, and we do not seem to be much nearer a solution of the problem it presents than that unfortunate experimenter was who at some remote period of antiquity doubtless furnished the basis for the story of Daedalus. But the experiment is being prosecuted at the present day, and the aid of modern science is being invoked to its elucidation. In the *Century Magazine* for September Professor Langley discusses the question in very hopeful language. "Above us," he says, "is the great aerial ocean, stretching over all lands and offering an always open way to them, yet a way that has never yet been trodden. Can it be that the power we have always lacked is at last found, and that it only remains to learn to guide it?" This question the writer proceeds to answer in virtually the following words: Compare the case to that which would present itself if the actual ocean had never been traversed because it was always covered with fields of thin ice, which gave way under the foot, which indeed permitted vessels to be launched and to float, but which compelled them to move wherever the ice drifted. Such vessels would resemble our balloons, and be of as little practical use; but now suppose we are told, "The ice which has always been your obstacle may be made your very means of transport, for you can glide over the thinnest ice provided you only glide fast enough, and experiments will prove not only how fast you most go to make the ice bear, but that it is quite within the limits of your strength to go with the requisite speed." All this might be true, and yet if no one had ever learned to skate every trial of this really excellent plan would probably end in disaster, as all past efforts to fly have done. Indeed, in our actual experience with the air, men have come to the same kind of wrong conclusion as would have been reached in supposing that the ice could not be traversed because no one had the strength to skate while the truth would be that man has plenty of strength to skate, but is not born with the skill. The simile is defective so far as it suggests that man can sustain himself by his unaided strength on calm air, which I believe to be impracticable; but it is the object of these experiments to prove that he has now the power to sustain himself with the aid of engines recently constructed, and by means I indicate, as soon as he has skill to direct them. If asked whether this method of flight will soon be put in practice, I should have to repeat that what has preceded is matter of demonstration, but that this is matter of opinion. Expressing, then, a personal opinion only, I should answer, "Yes." It is hardly possible that these secondary difficulties will not be soon conquered by the skill of our inventors and engineers, whose attention is already beginning to be drawn to the fact that there is a new field open to them, and, though I have not experimented far enough to say that the relations of power to weight here established for small machines will hold for indefinitely large ones, it is certain they do so hold, at any rate far enough to enable us to transport, at speeds which make us practically independent of the wind, weights much greater than that of a man. Progress is rapid now, especially in invention, and it is possible—it seems to me even probable—that before the century closes we shall see this universal road of the all-embracing air which recognizes none of man's boundaries, traveled in every direction, with an effect on some of the conditions of our existence which will mark this among all the wonders the century has seen.

THE SPEED OF CANNON BALLS.

During the past summer the government military authorities have been busily occupied in testing new systems of ordnance, and new kinds of powder at their experimental grounds on Sandy Hook. The manner in which the initial velocity of a projectile is determined is quite interesting. The instrument used for the purpose is called the Boulanger chronograph. It not only measures the velocity with which a ball or shell leaves the piece, but it records its own measurements. Two open frames are set up in front of the gun at a distance of 150 feet from each other. Wires are stretched back and forth across each of these frames, making a screen through which the projectile must pass. The wires in each of these screens form a complete electric circuit, which includes also an electric battery and an electro-magnet. When the gun is fired the projectile breaks the wire in the first screen, interrupts the circuit, and at the same time the armature of the magnet is released. In a very small fraction of a second the projectile has covered the distance to the second screen and interrupted its circuit, releasing another armature. The interval of time between the drop of these two armatures represents the time taken by the projectile to travel 150 feet. This period is so short that it is hardly conceivable. The chronograph, however, registers it accurately. Wires run from each of these screens to the laboratory near them, where are placed the chronographs, batteries, switchboard and other apparatus. The two electro-magnets in circuit with the screens are embodied in the chronograph. The first magnet has an armature, an iron rod about three feet long, which is suspended in a vertical position from its core. When the wires of the first screen are broken this iron rod falls. When the shot ruptures the wire of the second screen the armature of the second electro-magnet, which is placed a short distance below the first, is also released. It operates as a knife, and striking the side of the falling rod makes a slight mark. The distance through which the rod drops while the shot is passing from one screen to the other is indicated by the distance of the cut from the end of the rod. From this the corresponding interval of time is easily computed, and this forms the unit for the calculation of the projectile's velocity in feet per second. When it is necessary to obtain very accurate records several chronographs may be used for test-

READ PAGE 489.

ing the same shot. Of course, the rate of a projectile's velocity diminishes rapidly during its flight from the gun, and the calculations of the initial velocity must be confined to a short portion of its path immediately after it leaves the gun. Instantaneous photographs are obtained of the projectile as it strikes the target From these experiments in velocity the ordnance officer is able to determine the relative strength of different powders.

UNHEARD SOUNDS.

A POSSIBLE REVELATION FOR THE PHONOGRAPH TO ACHIEVE.

In reproducing in a recent issue of the AMERICAN ANALYST from the *Electrical Review* some suggestions of the brilliant correspondent who signs himself "The Prophet," relative to the future possibilities of the phonograph, we expressed the opinion that the writer probably had more conjectures in reserve on the same subject. Our surmise was confirmed by the appearance in last week's *Review* of the following striking article in reference to capturing sounds as yet inaudible to the human ear: There are in the human ear 3,000 little fibres which form the terminations of the auditory nerve. The existence of these fibres was made known by Corti, whose name they bear. Helmholtz showed that each one of these fibres is tuned to a particular note to which it responds. The principle upon which these fibres act is that which governs the production of sympathetic vibrations. If a cornet sounding the note C be played into the piano, it will be found that the C string of the piano will emit that note, even after the sound of the cornet has ceased. In a similar manner one of these little filaments of the ear responds to a given note, and conveys to the brain a special sensation which is always recognized as belonging to that note, and which cannot be produced by any other. It would seem to follow from this that only those notes which are represented by fibres can be perceived by the ear, and that a note having a very high or very small number of vibrations could not produce an audible effect; that the limit of audibility would vary with different ears, some having a greater and some a less number of the fibres of Corti, and that certain animals might be able to hear sounds which are too high for the human ear. It has been found that all of these things are true, and it is a matter of common observation that dogs and even savages are frequently much disturbed by noises which the civilized human ear cannot notice. It would be quite possible for beings having voices pitched at a very high key, and ears to correspond, to carry on a conversation which we would be totally unable to hear. For aught we know, the air may be at all times filled with most beautiful music. We certainly know that it is constantly agitated by sounds which we cannot hear. Shall we ever be able to listen to these unheard sounds, and the mysterious music of nature which has for centuries wasted its sweetness upon the dull ear of mankind? Science answers with the phonograph, and says that by its aid we may annex, perhaps, another world. It is conceivable that by employing a sensitive mirror vibrating a beam of light upon a moving photographic paper we may record vibrations which are too rapid for the unaided ear, and then reproduce them in the phonograph at a lower pitch, thus bringing them within our range. In the same manner vibrations which are too slow to affect our ear as music might be recorded, and then phonographically reproduced at a more rapid rate anywhere within our limits of audibility. This opens up an entirely new field of research, and may become a most important factor in the science of æsthetics. Perhaps it may demonstrate a numerical relation between harmony in music and in colors. This feature of the phonograph may become of the greatest practical importance in telephony, by making it possible to carry on a number of conversations simultaneously over one circuit. The existing systems of duplex telephony are not, strictly speaking, duplex, for there is really a circuit for each conversation. By this phonographic multiplex system it would be possible to carry on one conversation in the ordinary way, then to have a phonograph transmitting a message at such a speed that the vibrations impressed upon the line should be below the audible limit of the ear, and, consequently, having no effect on the original conversation. These slow vibrations could then be taken off upon a phonograph at the far end, and reproduced at the normal rate. In the same way one or more separate messages might be transmitted at abnormally high rates and reproduced at the usual speed. Of course, a multitude of practical difficulties exist, but there are no theoretical reasons in the way of this accomplishment. The working speed of the telephone line in the present state of the art is the most serious obstacle to be encountered. But this factor depends principally upon electro-static capacity; and while no scientist has yet practically overcome the retardation which it introduces, the significant fact remains that no one can prove that this trouble cannot be avoided on circuits of ordinary dimensions.

GIANT SLOTHS.

SOME PREHISTORIC AMERICAN MONSTERS.

While the South American megatherium and mylodon received their names from two of Europe's most eminent anatomists, it was a distinguished politician, no other than Thomas Jefferson, twice President of the United States, who stood sponsor for the first of the ancient ground-sloths found in this country. At the time of the discovery of the gigantic half-fossil bones in a cave in Greenbriar County, West Virginia, Jefferson was President of the Philosophical Association founded at Philadelphia by his friend, Benjamin Franklin. To him, therefore, were sent a few of the bones, among which three enormous claws were so conspicuous that he at first sight regarded the animal as "appearing to be of the tiger, lion, and panther species." Later, however, he announced only "the discovery of certain bones of a quadruped of the clawed kind," suggesting for the remains a name compounded of two Greek words—*megalas*, large, and *onyx*, a claw. So suitable was this designation considered that it was afterwards adopted by Dr. Wistar in his account of the bones; and when later they were described by Dr. Harlan, he also retained the name, adding to it *Jeffersonii*, to commemorate the illustrious man to whom the happy appellation was due. Remains of the *Megalonyx Jeffersonii* have come to light but slowly, and, until recently, in too fragmentary a condition to build up a skeleton therefrom. In December, 1890, however, at least a third of the required number of bones were discovered in excellent condition in Holmes County, Ohio, in a swamp to the northeast of Millersburg. Excavation, suspended by the oncoming of winter, may yet disclose more of this great animal and some fortunate museum become the owner of its complete skeleton. Meanwhile the discovery itself is of special significance, not only in the history of the megalonyx but of the whole family to which it belongs. *Megalonyx Jeffersonii*, not hitherto found north of the Ohio excepting on the Atlantic coast, is now known to have extended its wanderings at least one hundred miles further northward in the valleys of the Ohio, and no little light is thrown on the question of the length of time that has elapsed since these huge edentates were denizens of North America. The swamp, formerly one of those glacial lakes with which the front of the ice-sheet abounded, consists of peat to the depth of from five to ten feet overlaying a bed of marl formed by the deposition of silt from the glacier water. In its uppermost layer only, this marl contains a multitude of snail shells, showing that it was not till the ice-tongue had retreated to return no more, and ice-cold water had ceased to enter the lake that the water-mollusks appeared upon the scene. With them came water-plants such as are to be found in the Ohio swamps to-day, and animals that had been driven southwards by the ice, began slowly to return. Summers of exceptional warmth would even tempt hither some strange beasts from farther south. Among them, doubtless, were the megalonyx whose remains were found near Millersburg, between a tongue of gravelly drift that projects into the swamp and a small island of the same material. As its hindquarters were farthest from land the animal seems to have been swimming from one point to the other and, in attempting to land in the weedy shallows, to have been held fast by the shell-marl on which its bones were lying. The time of its death must thus have been after the final retreat of the ice had allowed the return of the snails whose shells abound in the upper layer of the marl. It must also have been long enough ago for the water-plants to form a peaty mass of five feet thickness above the bones. For this a space of six to seven thousand years will suffice. This discovery in Ohio, therefore, makes the megalonyx and his congeners, the megatherium and mylodon, creatures of yesterday, counted by geologic time. Contemporaneous with the mastodon they were, in this western world, among the foes of primitive man and that even after civilization had begun to dawn in the far west, on the rich plains of the Nile. The western world was the home of the gigantic extinct edentates, as it is now that of their modern representatives; but although half fossil remains of the former are found from time to time in North America, the southern continent must be considered to have been their favorite habitat. This fact was fully demonstrated by Charles Darwin, when, as a youth, he visited Patagonia and Buenos Ayres as naturalist to the expedition of the Beagle. Excited by the accidental discovery of some fossil bones of a gigantic edentate, he prosecuted a most diligent and intelligent search for more. Often did he spend whole nights in the work of resurrection, but more often he was compelled to return to the ship after only a few hours' labor, breaking off in despair the projecting extremity of some huge, partly excavated bone. The occurrence of these enormous bones was indicated to him in various ways—sometimes in local names, such as "The Stream of the Animal," "The Hill of the Giant." At other times a clue was given in traditions that ascribed to certain rivers the marvellous property of changing small bones into large, and to certain bones the power of growing after death. By one means and another he became impressed with the extraordinary number of the remains buried in the grand estuary deposits that form the pampas, coming to the belief that the whole area is one wide sepulchre of extinct, gigantic quadrupeds. In the north of Patagonia he actually excavated such a catacomb, finding in a space of about two hundred square yards the remains of nine extinct giants, six of which belonged to the family of edentates. The wonderful resemblance borne by these colossal edentates to the sloths and armadillos still inhabiting South America arrested the attention of the young naturalist, and turned his thoughts to questions regarding the appearance of organic beings on our earth and their disappearance from it. It was indeed the vivid impression made on his mind by excavating these fossil edentates with his own hands that formed one of the chief starting points for his speculations on the origin of species. These giant sloths have, therefore, apart from their intrinsic interest, a value that is almost sacred in every department of thought, being connected with one of the broadest generalizations that the world has ever known.—*Katharine B. Claypole in Pop. Science News.*

FINER THAN HAIR.—Platinum and silver can each be drawn into wire many times finer than human hair. The former has been drawn into wires so fine that twenty-seven of them could be twisted together into a hollow of a hair.

A DARWIN CRITIC.

WHICH REALLY SURVIVES—THE FITTEST OR THE LUCKIEST?

The struggle for existence is a fact; that it tends to the survival of slight favorable variations is an assumption. Darwin and Wallace both prove the fact, and then pursue the argument as if they had proved the assumption also. Wallace does admit that there is an element of chance in the survival. For my part, I am led to conclude that the distinction is very largely indiscriminate, and that those which survive are very often the fittest only in the sense in which the survivors in a railway accident or in an earthquake are the fittest. In a sense, we may speak of survival of the fittest as inevitable—the fittest meaning only that which has survived Used in such a sense it implies no theory at all, but used in the Darwinian sense it is misleading. I will define Darwin's position in his own words, examine some of his illustrations, and then bring forward some of my own: "(1) Natural selection acts by life and death, by the preservation of individuals with any favorable variation, and by the destruction of those with any unfavorable variation of structure. (2). Under nature, the slightest difference of structure or constitution may well turn the scale in the struggle for life, and so be preserved. (3). But the struggle will almost invariably be most severe between the individuals of the same species." Wallace defines Natural selection as "a rigid law, which acts by the life or death of individuals submitted to its action." Nevertheless, in spite of this definition, none of the illustrations brought forward by Darwin afford an instance of individuals of the same species struggling together and surviving or perishing by reason of *slight individual differences*. Many of his illustrations, in fact, tell against this argument For instance, on a piece of ground dug and cleared he marked out three hundred and fifty-seven seedlings of native weeds as they came up, and of those two hundred and ninety-five were destroyed chiefly by slugs and insects. There is not here, nor is there possible, any warranty for the suggestion that the seedlings chosen by the slugs and insects were least fitted to survive. Another example is that of certain species struggling with and overcoming others; thus, out of twenty species allowed to grow on a little plot of turf, nine species perished from the other species being allowed to grow up freely. There is nothing here to show that any of the species were modified in the process. Had some specially constituted individuals of the exterminated species survived, the experiment would have been to the point. The next example is the struggle against climate. Darwin cites the severe winter of 1854–5 as destructive of four-fifths of the birds on his own grounds. But surely this is indiscriminate slaughter. Doubtless the more vigorous do survive in such a struggle, but not in consequence of those slight individual differences which Darwinism takes as the foundation of new species. Both Wallace and Darwin, too, agree that the struggle is most severe at an early period of life. "In animals it is the eggs or very young that suffer most from their various enemies; in plants, the tender seedlings, when they first appear above ground." In other words, the greatest struggle is before the appearance of those individual differences which can be supposed to be of advantage in the struggle. It must be altogether indiscriminate as regards those slight departures from the type which are the hypothetical foundation of new species. The general Darwinian argument is that the intense struggle for existence tends to evolve individuals specially fitted to peculiar surroundings. The only evidence in favor of the theory is that there is an intense struggle, and that the survivors are best adapted to the environment. There is none that they become adapted by reason of the struggle. Wallace sets up for himself an imaginary opponent, who denies the fact of the struggle for existence, but after proving his point we find that the struggle thus pictured is not the one required, viz., one in which the slightest variation turns the scale; it is rather in which the slaughter is largely indiscriminate as respects such cases. The supposition that, when a number of individuals struggle together for existence until the majority are exterminated, the minority will grow strong and vigorous is not the only possible one, the whole race may become dwarfed and weakened, although some escape death. Strong and weak, bold and timid, species of animals exist side by side, and so, too, individuals of much varied capacity seem to have, on the average, more nearly equal chances of survival than the Darwinians realize. If, for example, the bold and strong overcome in the struggle to which the weak and timid succumb, the latter withdraw from the danger into which the former rush boldly to their own destruction. The swift will often escape while the slow are overtaken, but the "whirligig" of time brings its revenge; the slow learn cunning and caution, and escape while the swift, becoming over secure, are taken by surprise. And it seems almost a logical necessity that, if nature permits the existence of strong and weak, swift and slow, bold and timid in different and equally abundant races, equal diversity should survive and maintain the battle of life among individuals of a species. And how much more is it a question of chance than of favorable variations that determines which of the innumerable germs floating about in the atmosphere shall germinate and which not; which of the swarms of insects shall escape in the rapid flight of swallows through the air, which of the small organisms on which the whale feeds shall escape when the whale glides through shoals of them. In none of these nor in innumerable other cases which could be cited is there any ground to ascribe special fitness to the survivors. The swallow and the whale take little account of small favorable variations. If the facts of variation and the struggle for existence are to be used as the foundation of Darwinism it must be shown that the struggle is of the sort required, viz., one in which slight individual differences determine which shall survive and which perish. As I have endeavored to point out this has not been done either by Darwin or Wallace.—*London Review.*

FOOD AND SLEEP.

THE PROPER RELATIONSHIP OF REST TO DIET.

Rouxel has published in *Journal d'Hygiene*, an essay on the Art of Eating in which he says with much reason that, although rules and precepts on the best mode of eating have long been known they are little followed. Of course, in speaking of the "Art of Eating," the idea of "Art" is used in a very limited meaning. The first and best rule for sensible eating is to preserve the desire of eating (appetite) and it should not be obtained by any other means than by proper exercises, physical and mental work which should be made useful at the same time. The transformation of matter which is most active during work, causes the consumption of aliments received in the body for the purpose of replacing the physical forces consumed, as well as the secretion of all used up matters by the natural channels. Besides work, a convenient interval between the meals is necessary, to enable the stomach in the meantime, without being disturbed by new ingestions, to accomplish its task. As a second means for "good eating," the ancients employed baths, attritions and massage of the body before the principal meal. Epicurus, it is stated, recommended to be more careful in the choice of table-companions than of food, a prescription which will always be less observed than it deserves to be. Pleasant company at table has certainly a beneficial and stimulating action, although it would not remedy the defective quality of the viands. The best food is food of easy digestibility, provided they contain the necessary amount of nutritive matter. The important point is, not what is eaten, but what is digested. Mixed animal and vegetable food, the latter in preponderating quantity, is generally best accepted by the body. Rules of strictly general value cannot be given and the author might have quoted the famous "de gustibus non est disputandum." With much reason the author points out as a fifth rule observance of the right measure in eating (and drinking.) He who indulges in excesses either in eating or in drinking, says Brillat-Savarin, does not understand how man should eat and should drink. Eating before the preceding meal is digested, is injurious beyond a doubt. For the purpose of facilitating digestion it was thought conducive in former times, to take exercise after eating; we know now-a-days that a short physical and mental rest is the best means of inviting digestion.

ROCK BAROMTER.—Mexico has a rock that serves as a weather prophet, by changing color with every approaching change in the weather.

SPEEDY DEATH.—A velocity as high as 2,887 feet per second has been attained by a projectile from a rapid-fire gun. This is at the rate of 1,968 miles an hour. It is the highest velocity yet recorded.

INCREASED VALUE.—At Waltham a single pound of steel costing 50 cents is manufactured into 100,000 screws, which are worth $11. They look about like iron filings, and it needs a microscope to distinguish them as screws.

A WASP MYSTERY.—It is known that wasps' nests often take fire, supposed to be caused by the chemical action of the wax upon the paper material of the nest itself. May this not account for many mysterious fires in barns and out-buildings.

COMPOSITION GRINDSTONES.—Artificial grindstones, made of a mixture of pulverized quartz, powered flint, powdered emery or corundum, and rubber dissolved by a suitable solvent, are now made for sharpening tools which outwear by years any natural stone known.

SINKING MOUNTAINS.—Four different mountain peaks in Idaho are from 13 to 23 feet lower, by actual measurement, than they were fifteen years ago, and it is believed that this settling is going on with many others. The idea is that quicksands have undermined them.

HEAVENLY WONDERS.—The great Lick telescope reveals about 100,000,000 stars, and every one of them is a sun, theoretically and by analogy giving light and heat to its planets; this telescope reveals stars so small that it would require 30,000 of them to be visible to the naked eye.

IMPROVED GLASS.—A new Swedish glass is claimed to have important advantages for microscope and other fine lenses, giving greatly increased power. The chief improvement over other fine glass consists in the addition of phosphate and chlorine, which impart absolute transparency, great hardness, and susceptibility of the finest polish.

AIR BOAT.—The Aerial machine which Mr. H. Maxim is having constructed at Crayford is nearly completed. It will be propelled through the air by a light screw making 2,500 revolutions per minute, and, according to the inventor, will be capable of transporing through the air about 30,000 pounds of freightage. —*The European Mail*, London.

DIAMOND INK.—So called diamond ink for writing on glass, is a compound of fluoric acid and barium; the latter has no effect, it being simply a white powder to give body to the acid. The ink can be used with a rubber hand stamp, and it should be allowed to remain fifteen minutes, when the barium will brush off, leaving the design on the glass.

ROMAN DISH.—The Romans were epicures and one of their favorite dishes was made of the large white snails which abound in the Italian woods. So fond of this dish were they that when their legions were stationed in Britain after the conquest it was considered necessary to import these snails. Their progeny exists in large numbers in several places in England at the present day, notably at Birdlip, near Cheltenham.

BRIGHT STORIES.

A MYSTERIOUS GUEST.

From the French of Honore de Balzac.

"Sometimes they saw that by some phenomenon of Vision or Locomotion he could abolish Space in both its moods—Time and Distance—whereof the one is intellectual and the other physical."—LOUIS LAMBERT.

One evening in the month of November, 1793, the principal inhabitants of Carentan were collected in the salon of Madame de Dey, who held an assembly every evening. Certain circumstances which would have attracted no notice in a large town, but were such as to mightily interest a small one, imparted a peculiar importance to this customary gathering. Two days before Madame de Dey had closed her doors to her visitors on the ground of indisposition, and had also announced that she would be unable to receive them the following evening. At an ordinary time these two events would have produced the same effect at Carentan as a *relache* at all the theatres produce in Paris; on these days existence seems in a sense incomplete. But in 1793 the action of Madame de Dey was one which might lead to the most disastrous consequences. At that time a step involving a noble in the least risk was nearly always a matter of life and death. In order to understand thoroughly the keen curiosity and petty craftiness which on that evening animated the faces of all these respectable Normans; and still more, in order to share the secret perplexities of Madame de Dey, it is necessary to explain the part she played at Carentan. As the critical position in which she was situated at this time was, no doubt, the position of many during the Revolution, the sympathies of not a few of my readers will add their own color to this narrative.

Madame de Dey was the widow of a lieutenant-general decorated with several orders. At the beginning of the emigration she had left the court, and as she owned considerable property in the neighborhood of Carentan, she had taken refuge there, in the hope that the influence of the Terror would make itself but little felt in those parts. This supposition, founded on an exact knowledge of the country, proved correct, for the ravages of the Revolution in Lower Normandy were slight. Although formerly, when she came to visit her property, she had only associated with the local *noblesse*, now, out of policy, she opened her doors to the principal townspeople and the new authorities of Carentan, exerting herself to flatter them by the compliment of her acquaintance, and at the same time to avoid awakening their hatred or their jealousy. Kind and courteous, gifted with an indescribable sweetness of manner, she knew how to please without recourse to cringing or entreaty, and had thus succeeded in winning general esteem. This was due to her exquisite tact, which by its sage promptings enabled her to steer a difficult course and satisfy the exigencies of a mixed society; she neither humiliated the tetchy self-conceit of the parvenus nor shocked the sensibilities of her old friends.

At the age of about thirty-eight she still preserved, not that fresh, buxom beauty which distinguishes the girls of Lower Normandy, but a slender, so to speak, aristocratic type. Her features were delicately chiseled and her figure pliant and graceful; when she spoke her pale face seemed to light up with fresh life. Her large dark eyes were full of kindly courtesy, but an expression of religious calm within them seemed to show that the principle of her existence lay no longer in herself. She had been married at an early age to an old and jealous soldier, and the falseness of her position in the mist of a dissolute court had, no doubt, done much to spread a veil of grave melancholy over a face which must once have beamed with all the charm and vivacity of love. Obliged to repress unceasingly the instinctive impulses and emotions of woman at a time when she still feels rather than reflects, with her passion had remained virgin in the depth of her heart. Thus her chief attraction was derived from this inward youthfulness, which betrayed itself at certain moments in her countenance, and gave her ideas an innocent expression of desire. Her appearance commanded respect, but in her manner and her voice impulses towards an unknown future such as spring in the heart of a young girl were continually showing themselves. The least susceptible men soon found themselves in love with her, and yet were impressed with a sort of fear of her, inspired by her courtly bearing. Her soul, great by nature but rendered strong by cruel struggles, seemed to be raised too high for common humanity, and of this men appeared to be conscious. To such a soul a lofty passion is a necessity. Thus all Madame de Dey's affections were concentrated in one single sentiment—the sentiment of maternity. The happiness and pleasures of which she had been deprived as a wife she found again in the intense love she bore her son. She loved him, not only with the pure and deep devotion of a mother, but with the coquetry of a mistress and the jealousy of a wife. She was miserable when he was far from her, anxious when he had gone out; she could never see enough of him; she lived only in him and for him. To give an idea of the strength of this sentiment in Madame de Dey, it will be enough to add that this son, besides being her only child, was the last relation left her, the only creature on whom she could fasten the hopes and fears and joys of her life. The late count was the last of his family, and the countess the sole heiress of hers, so that every worldly calculation and interest combined with the noblest needs of the soul to intensely in her heart a sentiment already so strong in the heart of woman. It was only by infinite care that she had succeeded in rearing her son, and this had endeared him still more to her. The doctor had pronounced twenty times over that she must lose him, but she was confident in her own hopes and presentments. So in spite of the decrees of the faculty she had the inexpressible joy of seeing him pass safely through the perils of infancy, and then of watching with wonder the continued improvement of his health.

Thanks to her constant care, her son had grown into a young man of so much promise that at the age of twenty he was looked upon as one of the most accomplished gentlemen at the Court of Versailles. Above all, happy in a crown unattained by the efforts of every mother, she was adored by her son; they understood one another heart to heart in fraternal sympathy. If they had not been already bound together by the bonds of nature, they would have instinctively felt for each other that mutual friendship between men which is so rarely met with in life.

The young count had been appointed sub-lieutenant at the age of 18, and in obedience to the code of honor of the day had followed the princes in their emigration.

Thus it was impossible for Madame de Dey, being noble, rich, and the mother of an emigrant, to hide from herself the dangers of her cruel situation. With no other aim than to save her large fortune for her son, she had given up the happiness of accompanying him; but when she read at Carentan the stringent laws under which the republic was confiscating every day the property of emigrants, she exulted in her act of courage, for was she not preserving her son's wealth at the risk of her own life? Later on, when she heard of the terrible executions decreed by the convention, she slept in peace, knowing that her only treasure was in safety, far from danger and the scaffold. She congratulated herself in the belief that she had taken the best means of preserving both her treasures at once. By consecrating to this secret thought the concessions which those unhappy times demanded, she neither compromised her womanly dignity nor her aristocratic convictions, but hid her sorrows under a cold veil of mystery.

She had grasped all the difficulties which awaited her at Carentan. To come there and fill the first place was in itself a daily tempting of the scaffold. But supported by her motherly courage she was enabled to win the affection of the poor by consoling the misery of all without distinction, and to make herself indispensable to the rich by ministering to their pleasures.

She entertained at her house the *Procureur* of the Commune, the Mayor, the President of the distict, the Public Prosecutor, and even the judges of the Revolutionary Court. Of these personages the first four were unmarried, and paid their addresses to her. Each of them hoped she would marry him, either from fear of the harm that it was in their power to do her, or for the sake of the protection which they had to offer her. The Public Prosecutor, formerly an attorney at Caen, employed to manage the Countess' business, adopted an artifice which was most dangerous for her. He tried a generous and devoted line of conduct, in the hope of inspiring her with affection. In this way he was the most formidable of all her suitors, and as she had formerly been a client of his, he alone knew intimately the condition and extent of her fortune. His passion was therefore reinforced by all the desires of avarice, and further supported by immense power—the power of life and death over the whole district. This man, who was still young, proceeded with so fine a show of generosity that Madame de Dey had not as yet been able to form a true estimate of him. But despite the danger of a trial of craft with Normans, she made use of all the inventive wit and duplicity bestowed by nature on women, to play off these rivals one against the other. By gaining time, she hoped to reach the end of her difficulties, safe and sound. At this period the royalists of the interior went on flattering themselves from day to day that on the morrow they would see the end of the Republic; it was this persuasion which brought many of them to ruin.

In spite of these difficulties, by the exercise of considerable address, the Countess had maintained her independence up to the day on which she had determined, with unaccountable imprudence, to close her doors to her guests. She inspired such a real and deep interest, that the people who had come to her house that evening were seriously perturbed when they heard it was impossible for her to receive them. Then, with that barefaced curiosity which is ingrained in provincial manners, they immediately began to make inquiries as to what trouble, or annoyance, or illness, she suffered from. To these questions an old housekeeper, named Brigitte, answered that her mistress kept her room and would see no one, not even the members of her household.

The semi-claustral life led by the inhabitants of a small town forms a habit of analysing and explaining the actions of others, so germane to them as to become invincible. So after having pitied Madame de Dey, without really knowing whether she was happy or unhappy, each one set himself to discover the cause of her sudden retirement.

"If she were ill," said the first inquisitor, "she would have sent for advice; but the doctor has been at my house the whole day playing chess. He was joking with me and saying that there is only one disease nowadays . . . and that's incurable."

This jest was hazarded with caution.

Men and women, old and young, set themselves to scour the vast field of conjecture; each one thought he spied a secret, and this secret occupied all their imaginations.

By the next day their suspicions had grown more venomous. As life in a small town is balanced up to date, the women learned, the first thing in the morning, that Brigitte had made larger purchases at the market than usual. This was an indisputable fact. Brigitte had been seen very early in the *Place*, and—marvellous to relate!—she had bought the only hare there was to be got. Now the whole town knew that Madame de Dey did not care for game, so this hare

became the object of endless speculation. Then as the old men were taking their usual stroll they observed a sort of concentrated activity in the Countess's house, betrayed by the very precautions that the servants took to conceal it. The valet was beating a carpet in the garden ; the evening before no one would have noticed it, but as every one was constructing a romance of his own, this carpet served them for a foundation. Each person had a different tale.

The second day, the principal personages of Carentan, hearing that Madame de Dey announced that she was unwell, met for the evening at the house of the Mayor's brother, a retired merchant. He was a married man, honorable, and generally respected, the Countess herself having a great regard for him. On this occasion all the aspirants to the rich widow's hand had a more or less probable story to tell, while each of them pondered how to turn to his own profit the secret which obliged her to compromise herself in the way she had. The Public Prosecutor imagined all the details of a drama in which her son was to be brought to the Countess by night. The Mayor believed that a priest who had refused the oaths had come from La Vendée, and sought refuge. The President of the district was convinced it was a Chouan or Vendéan leader, hotly pursued. Others inclined to a noble escaped from the prison in Paris. In short, everybody suspected that the Countess had been guilty of one of those acts of generosity, denominated by the laws of that time "crimes," and such as might bring her to the scaffold. However, the Public Prosecutor whispered that they must be silent, and try to save the unfortunate lady from the abyss into which she was hurrying.

"If you publish this affair abroad," he added, "I shall be obliged to interfere, search her house, and then——!" He said no more, but every one understood his reticence.

The Countess's true friends were so much alarmed for her, that, on the morning of the third day, the *Procureur Syndic* of the Commune got his wife to write her a note, entreating her to hold her reception that evening as usual. The old merchant, bolder still, presented himself during the morning at Madame de Dey's house. Confident in his desire to serve her, he insisted on being shown in, when to his utter amazement he caught sight of her in the garden, engaged in cutting the last flowers in her borders to fill her vases.

"There's no doubt she has given refuge to her lover," said the old man, struck with pity for this charming woman. The strange expression of her face confirmed his suspicions. Deeply moved by a devotion natural in woman but always touching to us,—because every man is flattered by the sacrifices a woman makes for one of them,—the merchant informed the Countess of the reports which were going about the town, and of the danger she was in.—"For," he concluded, "if certain of our functionaries would not be disinclined to pardon your heroism, if a priest were the object, no one will have any pity on you, if it is discovered that you are sacrificing yourself to the dictates of the heart."

At these words Madame de Dey looked at him in such a strange, wild way, that, old man as he was, he could not help shuddering.

"Come," said she, taking him be the hand and leading him into her own room. After making sure that they were alone, she drew from her bosom a soiled and crumpled letter. "Read it," she cried, pronouncing the words with a violent effort.

She fell back into her easy-chair completely overcome. Whilst the old merchant was looking for his spectacles and wiping them clean, she raised her eyes to his face, and for the first time gazed at him curiously ; then she said sweetly, and in a changed voice ; "I can trust you."

"Am I not going to take a share in your crime?" answered the worthy man simply.

She shuddered. For the first time in that little town her soul found sympathy in the soul of another. The old merchant understood immediately both the dejection and the joy of the Countess. Her son had taken part in the expedition of Granville, he had written to his mother from the depth of his prison to give her one sad, sweet hope. Confident in his plan of escape, he named three days within which he would present himself at her house in disguise. The fatal letter contained heartrending *adieux* in case he should not be at Carentan by the evening of the third day. He also entreated his mother to remit a considerable sum of money to the messenger who had undertaken to carry this missive to her, through innumerable dangers.

The paper quivered in the old man's hands.

"And this is the third day," cried Madame de Dey. Then she rose hastily, took the letter, and began to walk up and down the room.

"You have not been altogether prudent," said the merchant. "Why did you have provisions got in?"

"But he may arrive dying with hunger, worn out with fatigue, and——" she could not go on.

"I am certain of my brother," answered the old man ; "I will go and get him on your side."

(*Concluded next week.*)

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

October.

MEATS.—Beef, mutton, ham, kidneys, liver, venison, sausage.

GAME AND POULTRY.—Pigeon, chicken, duck, woodcock, brant, grouse, partridge, rabbit, snipe, goose.

FISH.—Bass, blackfish, bluefish, clams, cod, crabs, eels, carp, catfish, flounder, halibut, herrings, lobster, mackerel, mussels, oysters, pike, porgie, prawn, rockfish, salmon, sea bass, sturgeon, smelt, turtle, white fish, whiting.

VEGETABLES.—Artichokes, beets, beans, broccoli, Brussels sprouts, cabbage, carrots, cauliflower, corn, cucumbers, egg-plant, garlic, lettuce, onions, parsley, parsnips, potatoes, radishes, rhubarb, savoy, shallots, spinach, squash, tomatoes, turnips, watercress.

FRUITS.—Apples, bananas, blackberries, grapes, melons, oranges, peaches, pears, pineapples.

PRACTICAL RECIPES.

FRENCH SOUP.—Put two or three pounds of lean beef to boil with some thyme, parsley, a little salt, and sufficient water to cover it. When the meat has boiled until it is ready to fall to pieces remove it from the pot, skim the grease from the remaining soup and add a few young carrots and small white onions sliced, also a few cloves and allspice. Just before serving add two teaspoonfuls of brown sugar. Do not thicken.

SAUCE PIQUANTE.—Put one-half cup of vinegar to boil with a little pepper and thyme ; let it boil until it is reduced to one-half, then add three-quarter cup of broth or clear gravy and let it boil again until it is reduced one half, add a little salt and serve.

APPLE SAUCE FOR ROAST GOOSE.—Take fine tart apples, pare, core and slice them, put them in a stew pan with a very little water and cook gently until soft and tender, mash them to a paste with butter, nutmeg and sugar, to make them very sweet. Be careful that the sauce is not thin and watery.

ROAST WILD DUCK.—Have a very hot fire. Put your ducks in the oven and cook only fifteen or twenty minutes, basting almost constantly. Have ready the juice of a lemon, a little hot butter, a little cayenne pepper, a dust of sugar and a wine glass of port, all mixed together. When you lay your ducks on the hot platter, score them with a sharp knife, four times down the breast, pour the dressing over them, garnish with parsley and serve.

MRS. M's FIG CAKE.—Make a batter of one cup of sugar, one-half cup of butter, one and a half cups of flour, two eggs, one teaspoonful baking powder, a little salt, and vanilla or lemon flavoring. Bake in three layers and put between them the following mixture :

Filling.—One cup of sugar, one-quarter cup of water, boil to a syrup, or until it will "thread;" chop eight figs very fine, take sugar from stove, cool five minutes, add beaten white of one egg, beat five minutes, then add figs

SPANISH CREAM.—Put one box gelatine in a saucepan on the fire and dissolve it in a little hot water. Let three pints of milk come to the boil, stir in the gelatine, then add the well-beaten yolks of six eggs with nine spoonfuls of sugar mixed into them ; stir up and take from the fire and add the whites beaten to a stiff froth. Flavor with a little vanilla and half a tumbler of wine, and mold.

SOUR CREAM CAKE.—Make a cup cake and bake it in layers. Beat up the yolks of two eggs with three tablespoonfuls of sugar, stir in a cup of very thick sour cream, add one-half pound almonds blanched and chopped, and put this mixture between the layers of the cake.

TABLE CONTRASTS.

ENGLISH GASTRONOMY FROM A FRENCH POINT OF VIEW.

In the October issue of the *Woman's World*, Emilie Lebour-Fawsett discusses the English and French customs and eccentricities of their respective gastronomical pleasures. We are told the English cannot be excelled anywhere in the refined ways in which most of their dishes are served, and their tables laid, whenever they have company. What can be nicer than the pretty fringed doileys placed under the pie-dishes to steady them, the pretty multi-colored cut-out papers encircling the pies or fruit tarts so as to hide the generally burnt edges of the dishes? Yes, there is no doubt about it, the English have more refined refinements than the French, and there is no end to the tempting novelties constantly appearing in the shops. Ever since I have been in England I have made it my duty not only to adopt these nice inventions, most of them conducing to comfort, but to endeavor to introduce them into my native land, where I am sorry to say they have not always received the welcome which in my humble opinion was their due. I remember having seen years ago a play in France, where tea being introduced and the sugar basin being handed to the hero, he took hold of the tongs in a puzzled manner, and after pretending for some time to ignore them at last uttered a joyful exclamation, and attracted the attention of the whole company by saying, "This is the way! this is the way!" at the same time delicately taking a piece of sugar between his finger and thumb and placing it with great difficulty in the tongs, after which he dropped the sugar triumphantly into his teacup, eloquently eulogizing the usefulness of the invention. Another very useful article not altogether, but pretty generally ignored abroad, is the salt-spoon. A salt-spoon is actually in the present day an article of luxury there, and you may esteem yourself very lucky when you meet with a little ivory spade-like one in the salt cellar. Fish knives, again, are another implement perfectly unknown or unappreciated in France, and whenever I have presented friends there with a box of them, they have been regarded as being too pretty for general use, and have been carefully wrapped up and put away for grand occasions ; and as on grand occasions the guests are very numerous, they were then not in sufficient number to be useful, and were finally esti-

mated as being only a pretty, useless toy. Another thing which is an equal object of astonishment to both French and English people is the different sizes of the plates used in the two countries. "What small plates!" exclaim the latter; they are like cheese plates." "*Quelles grandes assiettes!*" cry the former; "*ce sont de vrais plats!*"—and indeed they are larger And so are the glasses, and the knives and forks, and the soup tureens, and the dishes—oh, the dishes!—and the formidable, handsome dish covers, what a show they make on the table! But how I lament their being taken away as soon as they have acted their part, namely, to make a grand show! Consequently, whilst one is eating a first help of whatever they were intended to keep hot, their viands are inevitably getting cold, and the gravy is becoming set all round; and, however tempted you might otherwise be to accept a second help, you are compelled to decline it, not being of the tribe of those amiable husbands who will not make themselves disagreeable over a lukewarm dish of hashed mutton. The real use of dish covers is so absurdly ignored in this their mother country that I actually know people who will not allow their best covers to be warmed before being placed over the dishes for fear of their being spoilt, so that their object is completely defeated, for a cold cover put on only for a few minutes is more likely to chill the joint and the gravy than to keep them hot. A relative of mine, an officer in the French army, could not speak enough of the nice large houses he had visited in London, of their comforts and luxuries, of the space allotted to every one, from the fact of each family occupying a whole house, and the trees in the park, of the splendid horses and delightful fours-in-hand, and most particularly of the beauty of the British women. Where he was most amusing was in his description of a dinner party he had been present at in London. As every good epicure ought to do, he began by studying his menu, and had made his choice of the fish, and the different entrees which he preferred, but, through some incomprehensible mishap, he was offered the dish he did not want after seeing the last portion of his elect taken by his next neighbor. This was due to the extraordinary custom, unheard of abroad, of having a short supply of each entree, and two different ones going the round of the table at the same time. While he was talking a piece of saddle of mutton was placed before him without any adjunct or gravy whatever, and he was beginning to attack it, when a butler came with a tray containing some gravy and some currant jelly. The gravy seemed to him an absolute necessity, but the currant jelly! What had currant jelly to do with roast mutton? He looked at his wife, who was placed rather far from him, and saw her complacently consuming the currant jelly with her mutton in the most natural manner imaginable. He threw a stealthy glance at his neighbor, a lovely girl, and she, too, seemed to revel in the jelly, so he desperately followed suit. Was the jelly to be used instead of salt? No, for the salt-cellar was handed most gracefully to him, and he was wondering what this unnatural amalgamation was going to produce, when a dish of potatoes appeared at his elbow, and another of cauliflower. He looked at his plate, he placed some cauliflower in a nice retired corner of it, and was about to cut his first mouthful, when another vegetable dish is at his elbow. This time he cannot hesitate, for it is his favorite vegetable, asparagus, which he had specially marked in his menu, and the dinner taking place as it did in March, made this, always a delicacy, a still greater treat so early in the season. What is he going to do? A rapid look thrown over his plate cannot discover an empty place. He thinks of telling the footman to bring them round again in a few minutes, but in a few minutes they will all be gone, like the chosen entrees, and he will have to go without any. No, he has made up his mind, and the asparagus tumbles, one after the other, into the plate, over the meat, the potatoes, the cauliflower, the jelly, in the gravy—it is a regular *pele-mele*, completed by the necessary addition of the thick creamy melted butter brought by another servant. Why have not the plates little wells on their edges? However, he must have it; how could he eat his asparagus without melted butter? and he deposits a spoonful of this excellent looking compound anywhere in his plate. Now he begins to breathe. A side glance thrown to his right, then to his left, shows him plates in beautiful order, and the ladies seem to dispose very comfortably of all the viands which in his unfortunate plate are elbowing each other in the most helter-skelter way imaginable. He can no longer find the meat, though he probes for it with his fork. At length, between two stalks, he perceives his meat, he makes a dart at it with his fork, but the whole heap seems to undergo a sort of *bouleversement*. To establish the equilibrium he will take one of the asparagus, but to his dismay he sees all the company cutting the tips off and eating them with their forks. Shall he do the same? No, never! he gives up the idea of his meat, now surrounded with the coagulated butter, and takes delicately between his finger and thumb the long-coveted comestible, and after dipping it thoroughly in what he conceives to be the melted butter, finds too late, when it reaches his mouth, that it is strongly impregnated with currant jelly! Horror! he puts it down, looks for his finger-glass to dip his fingers in—English custom allows these only at dessert—and so he smears his napkin without, however, being able to rid himself of his sticky discomfort.

NATURE'S REMEDY.

THE BENEFIT OF FRUIT AS A HEALTH PRODUCER.

Of the many sweet-scented and palatable fruits which greet the eye in garden and forest, only some berries, the wood apple, and the medlar grew wild in Germanian forests. The better varieties of fruit came later from Italy and the Rhineland, but even in Italy most of the fruits had originally been introduced from the East and rendered native by culture. The especial art of ennobling fruit by raising from seedlings, crossing, etc., originated in Belgium. Naturally enough, the medical profession, which rightly or wrongly ascribed therapeutic properties to every product of the animal, vegetable and mineral kingdom, were not slow to ascribe special virtues to every fruit of the garden from the wild blueberry to the red-cheeked Vorsdorfer apple. Fruit was especially recommended for stilling the thirst in fever and also for costiveness, and to vary the diet. In the year 1778 we find Stolpertus, a physician of the Palatinate, writing as follows: "How much it is to be wished that the apothecaries would eliminate their *edelsteinpulper*, etc., from their official list, and substitute for them neat, white wicker baskets with fruit in season, turning in this way the half of the apothecary shop into a fruit store." Special fruit treatment was unheard of until a few decades ago, when the grape cure first came into repute. The treatment originated with the patrician families of Bern (Switzerland), who, in the autumn, used to visit the Vaud, in which they owned the principal estates, and indulge freely in the fruit of the vineyard. Of late years the value of fruit as a wholesome article of diet is becoming more generally appreciated, but by no means as extensively as it deserves. At the same time fruits vary to some extent in their properties, and before they can be utilized to best advantage the special qualities and action of each require to be well known. In the matter of nutrition, fruit contains little more than sugar and organic salts, the acidity giving them their characteristic taste and special aroma. The gelatinizing substance of fruit jellies is pectine. Albumen and proteids, and the substances which enter into the structure of the animal organism, are insignificant in quantity. There is as much albumen in an egg as in a pound of cherries, 18 ounces of plums, 2½ pounds of apples, or 4 pounds of pears. Fruit, consequently, contributes very little to the support of the system, but a great deal towards its maintenance in health. Its flavor, and not its nutritious contents, is the prime element of value; and this flavor varies with the proportion of sugar, acid, gum and pectine. The last substance holds the acid concealed, so that it is scarcely appreciable to the nerves of taste. The flavor of fruit depends further on the relation between its soluble and insoluble substances. To this is due the pleasant sensation which we experience in the mouth when we eat fruit. The peach and the plum dissolve on the tongue, because they are comparatively deficient in insoluble pectose and cellulose, while the whortleberry, for example, being rich in these insoluble substances, behaves differently. The sugar-content of fruit increases with cultivation, and the proportion of free acid and insoluble substances decreases, as may be noticed markedly by a comparison between the wild and cultivated strawberry. In abundant fruit years, too, fruit is sweeter and more juicy than in seasons of poor crops. An important discovery made by Dr. C. Bender, is that fruit gives off a great deal of carbonic acid, both in the garden and in the process of hoarding in the house; it is hence very prejudicial to the lungs, to sleep in a room in which apples, pears, etc., are being stored. As regards the physiological action of fruit upon the system, it may be said, in general terms, that the acid fruits, as currants, plums, etc., act as laxatives, while the sweet fruits, as strawberries, pears, and sweet bursting grapes, have an opposite tendency. Some people are, however, very sensitive to fruit acids, and cannot indulge without being troubled with numerous little sores on the inside of the lips. In such cases it is, of course, better to forego the indulgence. The core, peeling and other cellular substance of fruits is indigestible, and should not be swallowed, the more especially that, being undigested in the stomach, they may create a stoppage in the intestinal canal. Children should be especially cautioned on this head. Unfortunately, many physicians are not sufficiently well-informed as to the direct beneficial operation of fruit in certain diseases. Professor Uffelman has repeatedly drawn attention to the beneficial effect of fruit in chronic indigestion, and catarrh of the stomach, especially after excessive indulgence in spirituous drinks, also hæmorrhoids, tendency of blood to the head, scorbutic complains, and in certain diseases of the liver and milt. In every form of febrile complaint fruit juice, or the cold juice of boiled fruit, is extremely refreshing. It has been remarked that calculus is very rare in cider districts, potash is secreted in the organism of the cider drinker and acts on lime secretions like Vichy water. The regular fruit treatment is confined mainly to the grape cure. This fruit is longest in season, and produced in greatest abundance As regards the quantity consumed daily in chronic diseases, the patient ordinarily begins with a quantity which is gradually increased to six pounds a day. The grapes are not eaten fresh from the vine, for fear of chilling the stomach, especially in the early morning. Preference is given to fruit which has been gathered two days. An interval of from an hour and a half to two hours is allowed to elapse between the meal of grapes and of other food. Milk before or after fruit is not admissible. Fruit in season should be on the table of every household from morning to night, that young and old may help themselves, to their benefit and delight.—*Ueber Land und Meer.*

AVERAGE AGE.—There are about 105 women to every 100 men; one-quarter of the population of the world die before the age of 17 years; only one in 1,000 lives to be 100 years old, and only six in 1,000 reach 75.

COMPOSITION OF WATER.—Oxygen is a gas whose presence is necessary before the phenomenon of burning can take place, and hydrogen is a gas that burns with a pale blue flame, and yet the combination of these two gases forms water, which is the opposing element of fire.

OUR HEALTH IN AUTUMN.

Perfect health demands conformity on the part of the individuals to the conditions and changes in his surrounding circumstance. Any one who eats, drinks, and dresses the same the year through in a temperate climate is bound to pay the penalty of his carelessness in the form of sickness and pain. Besides this principle which, though self-evident, is too often overlooked and neglected is another of great importance. It is that every one in passing from one season to another should aid his system to meet the exigencies of the change that has occurred and also that of the one which is soon to happen. The first point to be observed is respecting the diet. The common practice of dropping the light vegetables and fruits of summer and replacing them with the heating meats and heavy dishes of winter is altogether objectionable. The system is not yet prepared for the latter kind of food, and will not be until the cold weather has set in for good. It is much better to continue the light diet of the dog-days as long as possible. Nature gives a wise hint in supplying the heavy apples and pears, the fall potatoes and later on the rich and wholesome nuts of the forest. These supply all the necessary heat as well as the material required in the upbuilding of maintenance of the body. The next point is as to exercise, fresh air and sunlight. Now, is the time for long walks, rides, and drives, for out-of-door sports, and for everything which tends to impart tone and strength to the muscles and sinews. The heat of July and August tend to produce lassitude, indolence and physical feebleness. September, October and November are the breathing-spell in which men and women can put themselves into a condition which will bid defiance to all the ills and discomforts of winter Many people labor under the impression that the autumn-air, especially after nightfall is injurious to health. The notion is absolutely devoid of truth. On the contrary the atmosphere is singularly free from malaria and disease germs. Every room should be thoroughly ventilated and every sleeping-room should have a window or other aperture open to insure free circulation of the air. In the third place, great care should be used as regards clothing. The pores are all open from the summer heat and the system is liable to colds from sudden changes in the temperature. The mere changing of apparel is not sufficient. What is needed is not so much the replacing of the light flannels and serges of the dog-days by the heavy and closely worn fabrics so common in American life, as the protection of the body by warm and yet loosely-woven underwear. The moment cold weather sets in the gauze undergarments of summer should be replaced by woolen ones. With woolen stockings and undersuits, a person can wear summer clothing into the Christmas holidays without danger of colds or rheumatism. On the other hand, heavy clothing and overcoats without woolen undersuits will not protect, but will generally produce the ills to prevent which they are worn. Last of all and most important, the tissues of the system should be cleaned and purified by Ayer's Sarsaparilla. The heat and moisture of midsummer have so wrought upon the system as to impair its tone and leave humors in its various parts. The effect is usually seen in a feeling of fatigue, in yellowish or blood-shot eyes, in a furred tongue, in constipation or its opposite dysenteric troubles, in loss of appetite, indigestion or liver-ailments. These in themselves are not diseases, neither do they require medicine. They are the symptoms and fore-runners of possible disease and require a mild tonic and alterative to tone up and strengthen the vital functions and to dispel all foreign or worn-out matter from the organization. A simple course of Ayer's Sarsaparilla accomplishes all this and much more. It does not interfere with the appetite or digestion, neither does it injure the bowels as do so many so-called blood-purifiers. It restores the normal activity of the liver, kidneys and lymphatics, and in this way removes all unhealthful bodies from the blood, the skin and the deeper tissues. Within a fortnight the complexion is clear and attractive, the eyes bright, the tongue clean and a feeling of high spirits and superb health pervades the system. By following these hints, a person will pass the autumn in perfect physical welfare and will be prepared to meet the strains and ills of the winter season, no matter how severe they may be.

BUSINESS NOTES.

CANNED DELICACIES.

Several new departures have been made by Messrs. Armour & Co., of Chicago, in their canned meats. Each can of preserved meat is now supplied with a patent key attachment for opening it. Another feature is the packing of condensed mince meats in 12-oz. boxes, and the packing of selected pickled meats—among them boneless pigs' feet, honeycomb tripe, lambs' tongues and sliced calves' feet, properly spiced and cooked, into fancy glass jars of various sizes, to be used as luncheon delicacies.

HORSFORD'S ACID PHOSPHATE,

for indigestion, dyspepsia, and diseases incident thereto. Dr. O. C. Stout, Syracuse, N. Y., says: "I gave it to one patient who was unable to transact the most ordinary business, because his brain was 'tired and confused' upon the least mental exertion. Immediate benefit, and ultimate recovery followed." Beware of imitations.

THE GERMAN emigrants outnumber the Irish two to one every year.

LONG FIBRE.—The longest continuous fibre known at the present time is that of silk. A cocoon of a well fed silk worm will often yield 1,000 yards long, and in one instance one has been produced which contained 1,295 yards without a break.

Buffalo Lithia Water, Spring No. 2, in Bright's Disease, Gout, Stone in the Bladder, and Diseases Generally of Uric Acid Diathesis, Etc., Etc.

DR. WM. A. HAMMOND, of Washington, D. C., Surgeon General U. S. Army (retired), Professor of Diseases of the Mind and Nervous System in the University of New York, etc.

"I have for some time made use of the BUFFALO LITHIA WATER in cases of AFFECTIONS of the NERVOUS SYSTEM, complicated with BRIGHT'S DISEASE OF THE KIDNEYS or with a GOUTY DIATHESIS. *The results have been eminently satisfactory.* Lithia has for many years *been a favorite with me in like cases, but the* BUFFALO WATER CERTAINLY ACTS BETTER THAN ANY EXTEMPORANEOUS SOLUTION of THE LITHIA SALTS, and is, moreover, better borne by the stomach. I also often prescribe it in those cases of CEREBRAL HYPERÆMIA resulting from OVER MENTAL WORK—in which the condition called NERVOUS DYSPEPSIA exists—*and generally with* MARKED BENEFIT."

DR. WM. B. TOWLES, Professor of Anatomy and Materia Medica, in the Medical Department of the University of Virginia:

"BUFFALO LITHIA SPRINGS, No. 2, belongs to the ALKALINE or, *perhaps, to the* ALKALINE SALINE Class, *for it has proved far more efficacious in many diseased conditions than any of the simple* ALKALINE waters.

"*I feel no hesitancy whatever in saying that in* GOUT, RHEUMATIC GOUT, RHEUMATISM, STONE *in the* BLADDER, and in all diseases of URIC ACID DIATHESIS, *I know of no remedy at all comparable to it.*

"*Its effects are marked in causing a disappearance of* ALBUMEN *from the urine. In a* single case of BRIGHT'S DISEASE *of the* KIDNEYS, I witnessed *decided beneficial results from its use, and from its action in this case I should have great confidence in it as a remedy in certain stages of this disease.* In DYSPEPSIA, especially that form of it in which there *is an excessive precaution of* ACID *during the process of nutrition*, in some of the PECULIAR AFFECTIONS *of* WOMEN, notably in SUPPRESSION of the MENSES, and in CHRONIC MALARIAL POISONING, etc., I have found it highly efficacious."

DR. G. HALSTEAD BOYLAND, late Professor of Surgery, Baltimore Medical College, late Surgeon French Army (Decorated), Member Baltimore Academy of Medicine, Member of American Medical Association.

"In BRIGHT'S DISEASE of the KIDNEYS, ACUTE or CHRONIC, BUFFALO LITHIA WATER, Spring No. 2, is, in my experience, *without a rival*, whether in the PARENCHYMATOUS form or INTERSTITIAL NEPHRITIS. In cases in which the ALBUMEN in the URINE reached as high as 50 per cent., I have known it under a course of this water gradually diminish and finally disappear, at the same time other alarming symptoms were relieved and the sufferers restored to health.

"In STONE in the BLADDER of the RED LITHIC ACID and the WHITE PHOSPHATIC DEPOSIT, the SOLVENT power of this water is *unmistakable*."

Water in cases of one dozen half gallon bottles, $5.00 f. o. b. here.

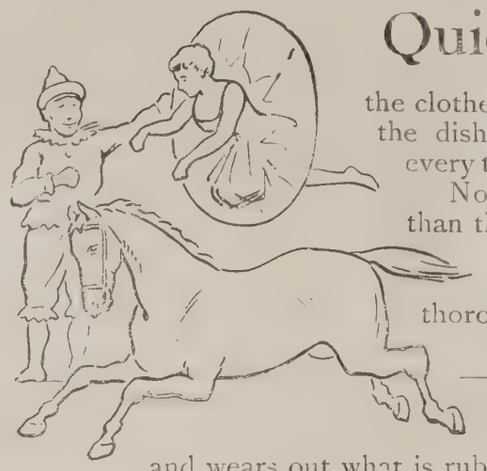
THOS. F. GOODE, Proprietor, BUFFALO LITHIA SPRINGS, VA.

TOBACCO PIPE.—Although tobacco had been introduced into Europe by Sir Walter Raleigh over a century before, it was not until 1690 that the tobacco pipe, in its form as we now know it, was introduced. Its inventor was Johann Franz Jacob Villarius. Before that date tobacco was smoked from clay cylinders.

VELOCITIES OF THE EARTH.—The earth travels in its orbit around the sun at an average pace of about nineteen miles a second. Owing to the revolution around its own axis a point on the surface of the earth at the equator travels at the rate of seventeen miles a minute, and in our latitudes about eleven miles a minute.

RAILROAD TIES.—According to good authority, $100 a mile of railroad track a year is saved the railroad companies by treating, chemically, the wood of which the ties are made, before laying them. The average life of an untreated tie is one to four years, while by the process it may be increased to ten or fifteen.

MANUFACTURED EGGS.—The contribution which the hen makes to breakfast possibilities would seem hard to imitate, yet it is freely stated in English journals that the industry of manufacturing eggs has attained large dimensions in that country, and further that the manufactured article is for most purposes as good as the genuine.



Quick as a wink

the clothes are washed, the paint scoured, the dishes washed, the house itself and every thing in it made bright and clean. Not with soap—you know better than that. But with Pyle's *Pearline*. Dirt leaves, and the work is done—easily, quickly, safely, thoroughly.

You save time with *Pearline*—but you save more than that. You're spared the endless rub, rub, rubbing, that tires you out and wears out what is rubbed.

It's money in your pocket to use *Pearline*. If it cost more than soap if it were dangerous—then you might hesitate. But you needn't. It's as cheap as any soap, and just as harmless.

Beware Peddlers and some unscrupulous grocers will tell you, "this is as good as" or "the same as Pearline." IT'S FALSE—Pearline is never peddled, and if your grocer sends you something in place of Pearline, do the honest thing—*send it back*. 244 JAMES PYLE, New York.

ORIGINAL. No. 67.

Flannel Cakes.

BY NELLIE CAMPBELL BEDFORD.

Four cups flour; one-half cup white corn meal; four eggs; one tablespoonful butter, melted; two cups milk; one teaspoonful salt; two level teaspoonfuls Cleveland's Baking Powder. Beat the yolks and whites of the eggs separately. Mix the flour, meal, salt and baking powder, add the milk, egg yolks and melted butter and beat hard. Stir in the stiffly beaten whites and bake on a hot griddle.

Use only Cleveland's baking powder, the proportions are made for that.

If cake dries out, gets husky, crumbly, or tasteless like bakers' bread, it isn't bad luck but bad baking powder.



Cake *keeps* moist, *keeps* its natural flavor when made with Cleveland's Baking Powder. One special excellence of Cleveland's.

CUTTING SHINGLES.—A new machine for cutting shingles is described as cutting 96,000 in a ten hours run. The wood is steamed for five hours before being placed under a knife that runs at 170 strokes a minute, at which rate the shingles are cut smooth and ready for treatment in the ordinary course. The steaming drives the sap out of the wood and prevents warping.

DAKOTA WHEAT.—Some interesting details of Dakota's phenomenal crops are in the form of accounts of big yields on individual farms. One farmer in North Dakota thrashed out 1,034 bushels of wheat from thirty-three acres of land—a little more than thirty-one bushels to the acre—and he netted $858 20 on his crop. Rolette County claims yields of forty bushels of wheat to the acre, seventy-five bushels of oats, sixty bushels of barley, and 500 bushels of potatoes. Yields of twenty-one to thirty bushels of wheat to the acre are common. One man has 700 acres of wheat giving thirty bushels to the acre. And the farmers are receiving eighty to eighty-three cents a bushel for their wheat.

INGENIOUS MEASURE.—An ingenious instrument, by means of which the profile of a river-bed can be taken automatically from a boat at the rate of 3¾ to 6¼ miles an hour, has been invented by a German engineer, Mr. Stechner. The apparatus consists of a curved arm, which is hinged at its upper extremity and is so long that the lower curved portion trails on the bottom of the stream. Of course, the deeper the stream the greater the inclination of the arm, and hence, by a suitable recording mechanism, the depth can be automatically registered in a revolving drum as the boat proceeds on its course. The instrument has been practically tested on the Elbe, where soundings were made over a distance of 297 miles in ten days.

IMPROVED BRICK.—It is found that a very superior quality of brick may be manufactured from the waste sand employed at the factories in grinding and polishing plate glass. The grinding of plate glass is accomplished by means of wooden plates covered with iron, between which quartz sand abundantly moistened with water is brought. By this manipulation of grinding, consisting in a constant moving to and fro of the grinding plate over the plate to be ground, the quartz sand becomes mixed with particles of iron and sand, and after losing its sharpness is cast aside as waste. This sand contains about fifteen per cent. of glass particles and two per cent. of iron, is very hygroscopic, and, before it can be used for making bricks, is dried, and then pressed into the mould under a pressure of 660 pounds per 0.155 square inch, the pieces thus obtained being subjected to a temperature of 2,732 deg. F., at which temperature the glass enters into a combination with the sand, a new product with new properties being the result. The bricks thus produced have a specific gravity of only 1.5 and are perfectly white, and, as they are not attacked by acids, are considered to be especially desirable for use in factories of chemical products, particularly in those of sulphuric acid. They also resist frost, and, as shown by experiment, they possess a compressive strength of from 840 to 975 pounds per 0.155 square inch.

ESTABLISHED IN LONDON, 1831.

DEAN'S PATENT Ardenter Mustard



This Mustard is Superior to any manufactured both for table and sick room



W. G. DEAN & SON,
361 & 363 WASHINGTON STREET; 84, 86, & 88 NORTH MOORE STREET, N.Y.

Fine Table Wines

From our Celebrated Orleans Vineyard.

Arpad Haraszthy & Co.

Producers of the

ECLIPSE

CHAMPAGNE,

530 Washington St.

SAN FRANCISCO.

GENERAL AGENCIES:

NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOSEPH R. PEBBLES SONS CO., 73 West Fourth Street
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.

Armour's

Extract of BEEF.

The best and most economical "Stock" for Soups, Etc.

One pound equals forty-five pounds of prime lean Beef.

Send to us for our book of receipts, showing use of **ARMOUR'S EXTRACT** in Soups and Sauces.

ARMOUR & CO., Chicago.

GRANT.

SHERMAN.

SHERIDAN.

McCLELLAN.

GEN. GRANT'S MEMOIRS.

Original $7 Edition for 30 Cents.

NO book, excepting the Bible, has ever had such a sale in the United States as General Grant's Memoirs. 650,000 copies have already gone into the homes of the rich, but the subscription price of $7.00 has placed it beyond the reach of people in moderate circumstances. **If 650,000 people have been willing to pay $7.00 for Grant's Memoirs, there must be a couple of million people in the United States who want them, and will jump at the opportunity** to buy them at the low figure here offered.

We will send you General Grant's Memoirs, publisher's original edition, best paper, cloth, green and gold binding, hitherto sold by subscription at $7.00,

FOR 30 CENTS!—FOR 30 CENTS!—ABSOLUTELY ONLY 30 CENTS!

and absolutely a proposition such as has never been made in the history of book publishing. The two splendid volumes of Grant's Memoirs, of which 650,000 copies have been already sold—not a cheap edition, but the best—for 30 cents; provided you send your subscription of $1.00 to the **AMERICAN ANALYST** one year, and also a subscription of $3.00 for the **COSMOPOLITAN MAGAZINE,** the brightest and cheapest of the great illustrated monthlies, itself equal to the best $4.00 magazine.

The **COSMOPOLITAN** is enabled to make this offer because of **the purchase of 600,000 volumes at a price which even publishers would deem impossible, and with the idea of running up its circulation to half a million copies.** By contract with the **COSMOPOLITAN,** and at no profit to us, we are enabled to offer our readers a share in the low price obtained through the largest purchase of books ever made in the history of the world.

If, however, you have Grant's books, our offer will permit you to take instead,

GEN. SHERMAN'S MEMOIRS, 2 Vols., sold by subscription for $5.00
GEN. SHERIDAN'S MEMOIRS, 2 Vols., sold by subscription for 6.00
GEN. McCLELLAN'S MEMOIRS, sold by subscription for . . 3.75

All of these are bound in cloth, green and gold, in uniform style with Grant's Memoirs.

Send us at once $3.00 for year's subscription to the **COSMOPOLITAN,** $1.00 for year's subscription to the **AMERICAN ANALYST,** and 30 cents for a set of Memoirs—$4.30 in all—to which add postage on the particular set of Memoirs selected.

WHY DO WE MAKE THESE GRAND OFFERS?

Simply because we want every intelligent family to keep well informed as to the popular science of this progressive era. We publish the **only popular journal on this subject—THE AMERICAN ANALYST.** Its subscription list is already very large; but we want at least **Fifty Thousand additional subscribers before January 1, 1892.** We know that, if we shall get them, we shall be able to hold most of them as permanent readers of our periodical. So at present sacrifice and at great cost, we have entered into a combination. The **COSMOPOLITAN** is the brightest and cheapest of the great illustrated monthly magazines; it gives annually 1,536 pages by the ablest writers, and over 1,200 illustrations by the ablest artists; and is just as interesting to the young boy or girl as to the oldest grey head. Now, then, we ask you to send us merely $4.30, and, on receipt of same, we will mail them to you regularly for **one year,** and will also send you (making no charge for the books) a set of **GENERAL GRANT'S MEMOIRS,** or either of the other works that you may select. **NO SUCH OFFER AS THIS WAS EVER MADE BEFORE BY ANY PUBLISHER SINCE TIME BEGAN!**

UNLESS OTHERWISE DIRECTED,

we shall invariably ship the books by express, charges to be paid by the receiver. If you wish the volumes forwarded by mail, you must distinctly say so at the time when you send us your address and the Money; and you must also enclose postage to prepay the packages at the following rates: **GRANT'S MEMOIRS,** 96 ozs., 48c.; **SHERMAN'S MEMOIRS,** 92 ozs., 46c.; **SHERIDAN'S MEMOIRS,** 84 ozs., 42c.; **McCLELLAN'S MEMOIRS,** 48 ozs., 24c. The government rate for postage on books is one-half cent per ounce. The **COSMOPOLITAN** and **AMERICAN ANALYST** are sent to subscribers free of postage.

SEND ALL ORDERS ADDRESSED

THE ANALYST PUBLISHING CO.,

19 Park Place, New York.

HARTSHORN'S SELF-ACTING SHADE ROLLERS

NOTICE SCRIPT NAME OF Stewart Hartshorn ON LABEL, AND GET THE GENUINE HARTSHORN



A HIGH-GRADE PIANO

AT A VERY MODERATE PRICE.

NEW DESIGNS. FANCY WOODS.

Terms Easy. + Monthly Instalments.

TWO, THREE AND FOUR PEDALS.

Catalogues, Prices, Terms, Etc., sent to any address.

EVERY PIANO WARRANTED 5 YEARS.

(Mention this Paper.)

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,

HOWARD STREET, BOSTON, MASS.

GOLD MEDAL, PARIS, 1878.



W. BAKER & Co.'s Breakfast Cocoa

from which the excess of oil has been removed,

Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

"BILLET"

are

Carefully Selected French Sardines, Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.

MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.

STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

BROMO SODA.

Useful in Nervous Headache, Sleeplessness, Excessive Study, Over Brainwork, Nervous Debility, Mania, Etc.

DOSE—A heaping teaspoonful in half a glass of water, to be repeated once after an interval of thirty minutes, if necessary. Each teaspoonful contains 30 grs. BROMIDE SODIUM and 1 gr. CAFFEIN.



SUPPLIED BY ALL DRUGGISTS

Ask for (Bromo-Soda, Warner & Co.) and take no other "Bromo."

CONFEDERATE MONEY.

Warranted Genuine and in Good Condition.

We are extensive dealers in Confederate Money—rare relics of our late civil war; also Bullets, Cannon Balls, etc. We want agents in every city North to sell these mementoes, and we will pay agents handsomely to sell our goods. We will furnish the money to those desiring at the following retail prices: Shinplasters, 10, 25, 50 and 75 cents each, or the entire set 50 cents. Complete sets, consisting of $100, $50, $20, $10, $5, $2, $1, 50c., $1 per set. $500 bills, $2 50 each. $100 bills, 15 cents, or two for 25 cents. $50 bills, 10 cents, or two for 15 cents. $5 and $20, 5 cents each. 50c., $1 and $2, 25 cents each. Inquirers enclose stamp for reply.

Publishers of SOUTHERN AGENT, Atlanta, Ga.

EVERY one in need of information on the subject of advertising will do well to obtain a copy of "Book for Advertisers," 368 pages, price one dollar. Mailed, postage paid, on receipt of price. Contains a careful compilation from the American Newspaper Directory of all the best papers and class journals; gives the circulation rating of every one, and a good deal of information about rates and other matters pertaining to the business of advertising. Address

ROWELL'S ADVERTISING BUREAU,
10 Spruce St., New York.



PRINT YOUR OWN CARDS
PRESS $3.00
Circular Size $8.00 Press for a small newspaper $44.

SAVE MONEY! Make money printing for others! Type setting easy. Printed instructions. Send 2 stamps for Catalogue of **Presses, Type, Cards, Paper,** etc., to the Factory.

KELSEY & CO.,
Meriden, Connecticut.

The Old Doctor's Book of Secrets.

Tells everything! Over 400 pages, closely printed, with illustrations Contains medical receipts and prescriptions, and much valuable information all young men should know. Sent securely wrapped in plain wrapper, postage prepaid, to any address for $1.00.

(Send for it. One receipt alone may save you many times its cost.

EUREKA PUB. CO., Box 441, Chicago.

HAY FEVER For the cause, (Not Cure), which is **preventable. Sufferers only** address

THEODORE RUE, Box 199, BEVERLY, N. J.



THE ORIGINAL AND GENUINE
(WORCESTERSHIRE SAUCE).



LEA & PERRINS' SAUCE

In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—

Lea & Perrins

Beware of Imitations; see that you get Lea & Perrins'

For sale in Bottles only (not in Bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS. NEW YORK.

RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R W ROBINSON & SON,
184 Greenwich St., N. Y



We can save you Fifty Dollars when you Build. See-



A complete set of Plans to build from, simply state about price of dwelling desired. 25 cts. in stamps. Our book "Beautiful Homes." 25 cts. Our monthly book "The National Builder," 25 cts. Address

The National Builder, Adams Exp. Bldg., Chicago, Ill.

GOITRE, or THICK NECK.

I have a positive, speedy, cleanly, harmless and almost inexpensive cure. Come or write to me at 28 Arlington Court, CLEVELAND, Ohio. It is no iodine smear. Cure made permanent.

Dr. J. CASKEY.

SWIFT'S

CHOICE

Chicago Dressed Beef

AND

MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,

UNION STOCK YARDS,

CHICAGO, ILLS.

TABASCO PEPPER SAUCE,

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced by connoisseurs to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY'S SON,

NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

THE

New Model "HALL"



A Perfect Typewriter. Best Manifolder. Terms to Agents Liberal. Portable. Inexpensive. Writes All Languages. *Read Mr. Howell's Opinion.*

"I wish to express my very great satisfaction with the Hall typewriter. Impressions and alignment are both more perfect than any typewriter that I know, and it is simply a pleasure to use it. It is delightfully simple and manageable."

(Signed) W. D HOWELLS.

Send for Catalogue and Specimens of work.

Address N. TYPEWRITER CO., 10 Temple Pl., BOSTON.

DETECTIVE! WE WANT A MAN IN every **locality** to act as **Private Detective** under our instructions. Send stamp for particulars.

WASHINGTON DETECTIVE AGENCY,
Box 787. Washington, Iowa.

DO YOU KNOW THE DANGER OF USING SOAP?

We do not mean soap made from proper material; and when we tell you that about ninety-nine per cent. of Toilet Soap is made from refuse fats gathered from tenement houses, hospitals, butcher shops, and from cattle dying of disease or during transportation, you will, we believe stop and think. Putrefactive changes have taken place in most of this material, as it is mixed with lean meat, blood, bones, sinews, etc. There is at least *one* soap that is made wholly from vegetable material—OLIVE and PALM OILS—and that is

VELVET SKIN SOAP.

It will keep the skin soft and in a healthy condition, as no animal fats are used in its manufacture. Nothing in one's personal outfit is quite so satisfactory as a thoroughly reliable Toilet Soap. We are confident that a trial of this article will insure its continued use. If the dealer does not keep it, do not take any other, but require him to order it for you, which he can do readily. **Otherwise, send to us direct.**

MANUFACTURED BY

REED & CARNRICK, Manufacturing Chemists,

447 GREENWICH STREET, NEW YORK.

THE QUEEN'S PRIZE SCHOOL OF HISTORY.

About two years ago the publishers of THE CANADIAN QUEEN added what has proven to be a very popular and successful feature to their publication in establishing their Prize History School. It has offered competitive examinations in English, Canadian and American History, giving valuable rewards to those making the most correct answers. During this time there have been added the names of over forty thousand new subscribers to their books. Rewards have been made by THE QUEEN which have cost them in cash over ten thousand dollars. THE QUEEN'S Prize School of History has received the sanction and support of the clergy, press, and, in fact, of the best people of the Dominion of Canada. The following, taken from a leading daily newspaper, expresses an opinion which is universal:

A HANDSOME PRIZE.

AN EVIDENCE OF WHAT A GENUINE MAGAZINE COMPETITION OFFERS.

"On Friday there arrived from Toronto, for Miss M. Hora, a handsome Shetland pony, harness and cart, being the first award in the Royal Quilt Competition of THE CANADIAN QUEEN magazine. It attests the genuine nature of the magazine's contests by its excellent condition and value. THE QUEEN has frequent competitions and has made innumerable awards, displaying a generosity quite surprising to those who have had experience of the limited field for Canadian journalistic enterprise. But THE QUEEN has been a success as a business venture from the start, and is growing in literary excellence steadily. It covers the field of fashion, as well as light reading; talks to the household, the young, and, indeed, all home classes. The competitions have been used to assist the introduction of the magazine, for where it is introduced it is quite certain to remain a monthly guest. The leading prizes have been made, as instance this latest to Kingston, while many smaller prizes have rewarded the moderately successful among competitors. THE CANADIAN QUEEN is truly royal in its ways."—*The (Kingston, Ont.) Daily British Whig*, June 27th, 1891.

QUESTIONS IN AMERICAN HISTORY.

1.—Give the names of the early navigators who it is claimed by historians first discovered America.
2.—From whom has America taken its name?
3.—What class and nationality first settled Virginia? New York? Massachusetts? Pennsylvania? Maryland?
4.—What action did the Continental Congress of 1774 take and what was the result of that action?
5.—What was the first battle fought in the War of the Revolution?
6.—What nation rendered the Americans great assistance in the War of the Revolution?
7.—Give the names of the committee appointed to draft the famous Declaration of Independence.
8.—What was the date of the signing of the United States Constitution?
9.—After becoming a nation and before the great Civil War, what were the principal conflicts which engaged the Americans?
10.—What was the direct cause of the Civil War? What Generals of the Northern Army have occupied executive positions under the Federal Government since the closing of the War? Who was Commander-in-Chief and who were the principal Generals of the Confederate Army during the struggle?
11.—How long did this War last and what is the computed loss of life?
12.—What can be said to day of the United States as a nation?

To the *First* gentleman sending the correct answers to the above questions in American History the publishers of THE QUEEN will present **"Majestic"** acknowledged the **Handsomest and Finest Riding Horse in Ontario.** ("Majestic" is sixteen hands high, thoroughbred, seven years old, and valued at $350.00.) To the *First* lady the publishers of THE QUEEN will present an elegant **Jacket of Genuine Alaska Seal** to be made according to the measurement supplied by the winner. To the *First* boy under sixteen years of age the publishers of THE QUEEN will present a **Little Giant Safety Bicycle** valued at $75.00. To the *First* girl under sixteen years of age the publishers of THE QUEEN will present an elegant **Music Box,** playing twenty tunes, finely finished and valued at $55.00.

To the gentleman from whom the *Last* correct answers are received before the close of this Competition, the publishers of THE QUEEN will present a **First Cabin Passage to Europe and Return** and **$200 in Gold** for expenses. This trip can be taken by the winner any time before October 1st, 1892. To the lady from whom the *Last* correct answers are received before the close of this Competition the publishers of THE QUEEN will present a **Pony, Cart and Harness.** To the boy under sixteen years of age from whom the *Last* correct answers are received before the close of this Competition the publishers of THE QUEEN will present a **Solid Gold Watch** containing one of the best American movements, and valued at $75.00. To the girl under sixteen years of age from whom the *Last* correct answers are received before the close of this Competition the publishers of THE QUEEN will present an elegant **Solid Gold Watch,** containing one of the best American movements, and valued at $65.00.

ADDITIONAL PRIZES IN ORDER OF MERIT: Silver Tea Services, Ladies' Gold Watches, Silk Dress Patterns, French Mantel Clocks, Portiere Curtains, Toilet Cases, Manicure Sets, and many other useful and valuable articles.

The object of the publishers in offering these liberal prizes is to introduce THE QUEEN Magazine into **new** homes. Answers must be mailed *on or before* November 10th, 1891, and must be accompanied by $1.00 for one year's subscription to THE CANADIAN QUEEN. Prizes awarded to subscribers residing in the United States will be shipped to them **free of duty.** The distribution of awards is in the hands of disinterested persons, and decisions will be based on the correctness of answers. Use your own language in wording the answers. No corrections can be made after your answers are mailed. THE QUEEN is a large, forty-eight page family magazine, especially interesting to ladies and children, and visits regularly **over one hundred thousand of the best homes** in Canada and the United States. The awards in THE QUEEN'S Prize School of History are made strictly with regard to merit, without partiality to persons or locality. The decisions must be accepted as final. If you have never seen a copy of THE QUEEN send six U. S. two cent stamps and receive a late number, post paid, containing letters from those who have received rewards in previous contests.

Address THE CANADIAN QUEEN, PRIZE SCHOOL OF HISTORY, 58 BAY STREET, TORONTO, CANADA.

GLENN'S SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,

C. N. CRITTENTON,
115 FULTON STREET,
NEW YORK.

IF you wish to advertise anything anywhere at any time write to
GEO. P. ROWELL & CO.,
No. 10 Spruce St., New York.

AN EDUCATION FREE! Do you want a good business education, including English Branches, Commercial Law, Business Forms or Book-keeping, or Shorthand and Typewriting, Languages, or Architectural or Mechanical Drawing, or Elocution **ABSOLUTELY FREE** in one of the largest, oldest and most prominent Business Colleges in the country? All you have to do is to get up Clubs for the **BUSINESS WORLD,** one of the brightest, newsiest and best office and home papers in the country. Established 14 years. Subscription price, with premium worth price of subscription, only $1.00 per year; handsomely illustrated. The BUSINESS WORLD will give Scholarships to those getting up Clubs. Write for particulars, **BUSINESS WORLD,** 15 WILCOX AVE., DETROIT, MICH.

ARROWHEAD HOT SPRINGS,
CALIFORNIA.

I MOST respectfully invite physicians of the East to write to me for information concerning this famous Southern California resort. The hot mineral water and mud, and the climate are unequalled in America. Diseases of the throat, lungs, liver, stomach and kidneys, nervous and skin troubles and rheumatism, are the ailments successfully treated. The hotel contains 125 rooms, is first-class, and lighted throughout with incandescent lights. Elevation 2,000 feet. Address,

H. C. ROYER, M. D.,
Arrowhead Springs, San Bernardino Co., California.

BLAIR'S PILLS.



Great English Remedy for GOUT, RHEUMATISM and KIDNEY COMPLAINTS.
SURE, PROMPT and EFFECTIVE.
Large Box, 34; Small, 14 Pills.
At all Druggists, and
224 WILLIAM STREET, NEW YORK.

HAMMOND'S
CELEBRATED
Calumet Oleomargarine

Strictly pure, cheap and healthful
Ask your grocer for it.
Put up in packages of all sizes, also prints and rolls.

C. H. HAMMOND CO.,
607 to 615 THE ROOKERY,
CHICAGO.

Also offices at Boston, South Omaha, Neb., and Hammond, Ind.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 42. NEW YORK, THURSDAY, OCTOBER 15, 1891. WHOLE No. 242

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - $1.00 per year.
Single Copies, - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.
Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.
Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,
H. LASSING, M. D., } Editors.
T. P. McELRATH, }
No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

Asthma and Goose Feathers 499
Alaskan Explorers 499
Bright Stories.
A Mysterious Guest.—*Concluded* 496
How it got into Print 497
Domestic Dietetics 499
Editorials 493
Prehistoric Relics; Sanitary Triumphs; American Aluminum Abroad; Unearned Citizenship; American Health Association.
Electrical Equivalents 498
Historic Watches 494
Light 495
New Air Ship 494
Old Time Delicacies 498
The Grip 495

PREHISTORIC RELICS.

The Archæological Association, which is under the auspices of the University of Pennsylvania, is about to set on foot original explorations in parts of the United States which have not been carefully examined in respect of their prehistoric relics. Several men, who are experts in this kind of scientific work, will be placed in the field. During the summer of 1891 the association has thoroughly explored a number of ancient village sites in the valley of the Delaware, and the work has thrown new light on the customs and condition of the prehistoric Indians. On an island in the Delaware an implement maker's workshop was found, and in another place were 116 finely chipped knives, averaging about six inches in length. The quarry of jasper, where the Indians got their raw material, was found, and thousands of specimens of their workmanship were secured.

SANITARY TRIUMPHS.

In an interesting article in the June issue of the American Statistical Association's quarterly publication, we find some significant facts regarding the advantages of sanitary legislation experienced in England within the past sixteen years. In the year 1875 a general law was passed in England for the protection of the public health, known as the Public Health Act, and from that time the death rate in England has decreased for all diseases which owe their origin and growth to defective drainage and impure water supply. Typhoid fever is such a disease, and the diminution of 57 per cent. in the death rate from this malady is undoubtedly the greatest triumph for sanitary reformers. During the ten years from 1866 to 1875 the average annual mortality was 22.19 per thousand inhabitants; and from 1838, the first year of careful registration, to 1865, the average annual rate was about 22.35 per thousand. But for the ten years of the period 1880 to 1889 the average falls to 19.08. It seems justifiable to ascribe this diminution in the death rate to the operation of the Public Health Act, and the execution of duties such as drainage, inspection of water-supplies, vaccination, and others which are becoming better understood. Mr. Farr, in his *Vital Statistics*, estimates the value of human life in England to be about $770 a head; that is, the value inherent in the people as a productive money-earning race. If we suppose, which is allowable if other things remain the same, that this diminution of the death rate during this last decade was due to the measures taken to that end, we find that the number of lives saved, representing a total for the decade of 856,804 persons, according to Mr. Farr's estimate represents a social capital of $650,000,000. Thus, in ten years the country has more than regained the sum that was spent in sanitary improvements in the fifteen years, and in this calculation nothing figures for spared grief, better health and happier life. This diminution of mortality is not observed in all forms of disease. The mortality from zymotic diseases, from 1861 to 1870, was 42.54 per 10,000 living, and this was reduced to 24.52 in the period from 1880 to 1889, but measles, diphtheria, and whooping-cough appear to have escaped the influence of sanitary measures. Consumption has equally diminished in England in these last years. The mortality from this cause in the years 1861 to 1870 was 24.89 per 10,000 living. For the period 1880 to 1889, it fell to 17.36. The statistics further demonstrate that sanitary measures affect the death rate of young persons between the ages of one and twenty-five years, and especially between ten and twenty years. The gain in this latter decade, which amounts to 28 per cent., is economically a great gain. The death rate for old persons has increased during the last decade, a fact which may be chargeable to the bustle of the nineteenth century, the wear and tear upon the nervous system, while the effect of sanitary improvement is most noticeable in the abatement of infant mortality.

AMERICAN ALUMINUM ABROAD.

The German Government has recently placed an order in the hands of its agents in the United States for a large quantity of pure aluminum for army purposes. This order calls for eighty-five tons of the metal. The amount placed in the hands of the agents is $110,000. As yet the order has not been accepted, and probably will not be for some time. There are only two companies in this country—one in Lockport N. Y., and one in Pittsburg, Pa. Neither can accept the order, or part of it, because of a gigantic patent litigation which is now being waged between them, and the probability is that the German Goverment will have to wait some time before they can secure the metal. This metal will be turned into buttons, buckles, and for field purposes, such as wire for telegraphic and telephone services and cartridge shells, it having been proved that aluminum will withstand the corrosive action of the new smokeless powder which has come into universal use in Europe lately. It is also to go into a certain newly invented pontoon bridge, its great lightness especially commending it for this purpose.

UNEARNED CITIZENSHIP.

We have had occasion heretofore to discuss the manner in which the privileges of American citizenship are often perverted and abused by that class of foreigners who, through the force of early association or inborn prejudice, are incapable of appreciating their real worth and purpose. A case recently occurred in Wisconsin that fairly illustrates one phase of this subject. A German, fifty years of age, applied to a court in that State for naturalization papers. It appeared that he had come to this country when a young man, had lived in Wisconsin twenty-five years, and had amassed the snug fortune of more than one quarter of a million dollars. He had never before sought to be made a citizen; he never cared to vote; he was all the time absorbed in the greed of wealth; the lust of gold was his dominant passion. He had never married—had no home except as a bachelor, no binding ties of any kind. He was rich beyond his own expectations, had converted all his wealth into money and bonds, and his purpose was to return to Germany, there to abide the remainder of his days. His only object in seeking American citizenship, with naturalization papers to show, was that he would thereby be exempt from the obligations which Germany exacts of her born subjects in military service and otherwise. He had no intention of exercising the privileges of citizenship in the United States, as a voter or in any capacity; no purpose of remaining in America. He had witnesses in court to prove his residence in Wisconsin for upward of twenty years, to testify to his moral worth and standing in the community, and to every other qualification of eligibility to citizenship. But he had himself stated to the presiding judge the purpose of his action and it determined the application against him. The Court

READ PAGE 501.

held that a man who had for so long a time neglected his opportunity, and now sought citizenship solely as American protection, and exemption from the duties of his native land, to which he intended to return to pass the remainder of his life, was unworthy of the sacred investiture, not at all fitted for citizenship, and denied his application. The Court ruled rightly. Such should be the ruling in every case of the kind. In return for the endowment of American citizenship the individual incurs obligations and duties which should be observed and performed. The precious boon to the alien born is not conferred simply to gratify selfish motives, and assure protection abroad.

AMERICAN PUBLIC HEALTH ASSOCIATION.

The 19th annual meeting of the American Public Health Association will be held at Kansas City, Missouri, October 20th to the 24th, 1891. The Local Committee of Arrangements announces that all the Railway Passenger Associations of the country, have granted a one and one-third fare rate on the usual certificate plan, for the round trip that is: delegates will procure a certificate of attendance from the agent at the starting point by paying full fare to Kansas City. On their arrival they will have the certificate of attendance signed by the proper officer of the Association at Kansas City. This certificate will then procure return ticket for one-third fare. All the leading hotels of Kansas City will give special rates to delegates. Arrangements have been made for an excursion into Kansas, as one of the features of the entertainment of the Asssociation.

NEW AIR SHIP.

A BALLOON THAT GENERATES ITS OWN GAS.

Other parts of the world as well as the United States have new projects for the navigation of the air. Henri Lecomte, Director of the School of Aerostation at Paris, will soon make a rash attempt to cross Africa by balloon, starting from Mozambique. The peculiar feature of his balloon is a special apparatus for the production of hydrogen gas, so as to maintain the floating power. This gas is to be generated during the night time. The balloon will carry provisions for 100 days, and will have a capacity of 10,000 cubic metres. Experienced aeronauts believe that this is a very hazardous undertaking. Lecomte proposes to cross Africa in its widest part, making a longer journey than any yet recorded. If an accident occurs to his air ship, his chances for reaching civilization are about as slim as they would be if he descended in the middle of the Atlantic, for if compelled to abandon his balloon he is almost certain to find himself in a savage wilderness, hundreds of miles from succor, and very likely among hostile natives. Mr. Maxim, the inventor of the Maxim gun, is now completing his invention of an aerial machine which he asserts will be superior to all other agencies of destruction in warfare. He has already spent $50,000 on his invention, and if necessary $50,000 more will be expended to insure success. The machine is building at Crayford, near London, and is nearly ready for a practical trial. Maxim has made an exhaustive series of experiments to test the practicability of his idea, and it remains to be seen whether he can carry out his scheme with a full-sized machine. He says his invention has been recently tested while captive, the engine propelling it being at work, and he thinks he proved to be capable of carrying at least 10,000 pounds. The weight of the full-size machine, including men, engines, fuel, water and all accessories is 5,400 pounds. The fuel is gasoline, giving 5,000 gas jets. The machine is propelled by two screws, and there is an engine to each screw. Maxim obtains buoyancy by the pressure of the air on the under side of sundry planes inclined upward, this pressure being due to the forward motion of the machine as it is driven by the propeller. He expects that the machine will actually lift itself from the earth. The men who first navigate it will undoubtedly incur great risk, if indeed they can get it above the earth at all. Mr. Brearey, who has made air machines a study, says that the working data for Maxim's machine can be obtained only by free flight. "We cannot, therefore," he says, "expect success at the outset." As yet everything is purely tentative, and Maxim's friends can only hope that he is on the right track. His idea is that, with such a machine, destructive projectiles can be hurled down upon an enemy with annihilating results. Those who know what his intention is say he has at least devised a lighter motor than has been previously invented for use in air machines.

HISTORIC WATCHES.

HOW JEWELRY SOMETIMES IS ASSOCIATED WITH ROMANCE.

The watch of King Jerome had a parallel in the watch of King Leopold I., says a Paris correspondent. That timepiece was in repousse gold and girdled in brilliants. It had also the cipher in those gems on a shield on the back of L. S. C. The taste shown in the design was not irreproachable. Who was there in the art world in London, in the time of the Prince Regent, whose taste was not as bad as it could be, Sir Thomas Lawrence excepted? and he was in a degree infected, and thought more of the belongings of the fair ladies who sat to him than of the sitters. Well, to return to the watch. If it was not beautiful in design it was very costly, and was the gift of the Princess Charlotte of Wales. She died before she had been a year a wife. The widower was not to be consoled for her loss, though always seeking consolation. Caroline Bauer, in her memoirs, speaks of his attempts to find it. If Mary Anne Smith or Baroness Meyer had scribbled their recollections for the printers, they might also have told some curious tales. Leopold erected, in the shape of a round Greek temple, a mausoleum in the garden of Claremont. He gathered together there busts and portraits of his lost wife. At the end of twelve years of sentimental mourning and money saving he was called to reign over the newly created kingdom of Belgium on condition of marrying the eldest daughter of the King of the French. He thought of transporting the mausoleum to Laeken, but as the Princess Charlotte's remains belonged to England he could not do so. What he did instead was to have a kind of reliquary placed between the works of the watch and the case, in which he placed a miniature of the princess, a small painting on ivory of her tomb, a lock of her hair, and a chip of the oak coffin in which she and her dead child lay. When Leopold married, the Queen of the Belgians noticed that he was always contemplating his watch when he sat in his study. As the palace was rich in clocks, she could not divine why he so often gazed on the watch which he always wore. Directly she came upon him when he was thus engaged he shut up the watch and pocketed it. He was a cold, distant man, and never allowed her to talk playfully to him. Her curiosity naturally grew very keen to know why the watch had such great attractions for him, but she only discovered it during one of his illnesses, when she got the watch, and, forcing a secret spring, found there the image of her predecessor. The countenance of the Princess Charlotte was a lovable one, and she had plastic beauty. Queen Louise was taken with a fever of retrospective jealousy so strong that she lost all self-control. She confessed to Leopold her misery. He asked her how dared she meddle with souvenirs which he held sacred, and refused to be nursed by her. When he recovered, he told her that she had estranged herself forever from him by her impertinent prying. Their eldest child died, and no reconciliation followed his death. Leopold seriously contemplated getting the Belgian Chambers to nominate his nephew, Duke Augustus of Saxe-Coburg, to succeed him. This plan was put an end to by the intervention of Louis Philippe, who informed his son-in-law that France would not suffer him to carry it out, and Talleyrand was sent to Brussels to bring together the virtually separated royal pair. He was able to do so. But the queen, when dying, in 1851, said that from the day she forced the secret spring of the watch she always felt as though the corpse of the Princess Charlotte lay between herself and Leopold. In sign of repentance at her too demonstrative jealousy she called her eldest daughter, the now insane Empress Charlotte of Mexico, after the first wife of Leopold. The watch of Jerome Bonaparte, King of Westphalia, was made on the same system as that of Leopold, but of exquisite workmanship. Jerome was one of the most dissipated men of his time, and as fond of baccarat as the present Prince of Wales. When, after his imperial brother was transported to St. Helena, he had gambled away his money, he staked rings, pins, and snuff boxes. One night, as he was playing at the house of Fenzi, the banker at Florence, he threw his watch on the table, having nothing else to stake. His wife was standing by, and boldly taking it up proceeded to examine it. "I beg you not to open it," cried Jerome. This excited the curiosity of Queen Catherine, and she insisted upon seeing what was inside. Her erring husband, for whom her fondness was extreme, pushed a spring, and a most beauteous young face appeared. Catherine burst into tears, and insisted on being told who the fair original of the miniature was. "Since you must know," cried Jerome, "It's my wife, Elizabeth Paterson, whom the Emperor made me leave to marry you!" Were not these watches like the mysterious chamber in Bluebeard's castle? and were not the consequences of seeking to know what they hid almost as bad as those which befell Bluebeard's wife for peering into the room which she was not to open? The ex-imperial family of Brazil has received the good news that all the jewels classed as private property of Dom Pedro and his late wife would be delivered over to him. Those bought by the nation at the time of his marriage, to be given to his bride, are excepted; so is the crown, which was made in London, the sceptre, and the imperial mantle. The jewels of the Crown Princess, which were bought for her in pursuance of a vote of the Brazil Parliament, which granted her a dowry, are declared national property. But they are of far less value than those owned by her father and mother. Dom Pedro and his wife had the finest collection of Brazilian diamonds, perhaps, in the world. They will doubtless soon come into the market, the Emperor being heavily in debt, and his income having altogether fallen off. The Cronstadt fetes have made everything Russian the fashion. Shops are being opened on and near the Boulevard, in the windows of which Russian orfevriere and plate are on sale. The teaspoons are so enamelled in bright colors as really to merit being classed with jewelry. As much may be said for egg cups, tankards, cruet stands, and hand mirrors. If the French take up this style, they will go a long way in giving it a stamp of higher beauty. I suppose the taste for bright colors evinced by Russian gold and silver smiths came at no far back period from Asia. The six months' winter, when the Czar's vast empire is under snow, must render polycrome ornaments of the breakfast and dinner tables of the wealthy extremely grateful to the eye. Richly embroidered tablecloths, also in many colors, go with them. The tones seem crude in this climate; but to visual nerves, jaded with endless stretches of white out-of-doors, they will be a pleasant stimulus.

LIFETIME OF SALOONISTS.—The average lifetime for proprietors of beer saloons is 51.35; proprietresses of beer saloons, 51.95; brewers, 42 33. Inquiry has shown that the male proprietors of wine rooms live but forty-nine years, and women who keep wine rooms but forty-seven.—*Med. Record.*

LIGHT.

THE NECESSITY OF SUNLIGHT FOR HUMAN HEALTH.

The physician who has witnessed the last hours of great men, has not much faith in the broad grasp and keen insight sometimes ascribed to their latest utterances. The necessary strength and disposition is almost invariably wanting at the moment of separation of soul and body. Goethe, too, when in his last moments he gave expression to the words with which this article is headed, had probably no thought of using them in any spiritual sense; he merely felt the shadow of death passing over his eyes and craved for "the source of sweet life," as he called the sun in one of his letters to Schiller. It is in this sense, too, that we employ his last words in the remarks which follow upon the influence of light—not upon the eye, for which one can consult the numerous works of specialists, but upon the whole organism. The influence of light upon the system has, strangely enough, not been made the subject of so much investigation as other hygeinic conditions; but it may be asserted without fear of contradiction, that not even fresh air is more necessary to our existence and well-being, and that no other agent exerts so great an influence upon the nervous system, the medium of our intellectual activity and spiritual life. From the hoariest antiquity light has been regarded as the chief life-giving and life-qualifying agency. In the Mosaic account of Creation, the fiat "Let there be light," heralded the birth of the world; and to-day we use the words "he first saw the light" to signify birth. It was reverenced by the ancient Egyptians as the supreme god of the universe, and worshipped as Ra, and also by the Persians as Ormuzd, the lord and giver of light. The Christian heaven, too, is represented as a region of light. And when one speaks of the sombre, serious outlook upon life of northern, in contradistinction to the light, joyous nature of southern races, we but indicate the influence of light in the formation of national temperament, which may be regarded as similar in effect to the contrasted conditions to which the individual is exposed. In the correspondence between Goethe and Schiller the weather forms a frequent topic of criticism. Absence of light oppresses the spirit, and renders us gloomy, creates, indeed, constitutional sickly states of mind, of which, perhaps, the most conspicuous example is the spleen among the people of foggy England Abundance of light elevates and stimulates spiritual force. "The season oppresses me as it does you," wrote Schiller, whose creative power, like Goethe's, grew feeble, if not wholly dormant, in winter. No wonder, then, that all the poets, from Sophocles down, have apostrophised the sun, the source of light, in glowing terms. Light calls into activity the healthy and best forces of the human soul, and good deeds can be done openly. Only evil deeds and evil thoughts, shrink from the light. "The dark side of human nature" is something more than a poetic expression. The want of light, exercises, with most men, a prejudicial influence on the character and direction of thought, as any one may determine by taking notes of his personal experiences. How often have physicians been told by patients, ordinarily calm and sensible, that on sleepless nights they have had to kindle a light to liberate themselves from the evil spirits of darkness, and escape the influence of their own imagination, by the aid of which they conjure up the most fantastic and distressing experiences which they cannot escape. That darkness makes the spirit sad and gloomy, is an observation frequently confirmed by oculists, who are compelled sometimes for weeks to seclude their patients from the light. There are even patients who cannot submit to this course of treatment, and who declare that it would drive them mad to submit longer to artificial darkness. In military circles, too, it is well known that imprisonment in a dark cell has additional horrors. With some people darkness creates very depressing conditions; and, on the other hand, now weaker, now stronger moods of exaltation—waking phantasies as they are called—these are for the most part gloomy; and, if by chance they invade the domain of lighter fancies, they present them only as caricatures of real joyous musings. It is further well known that darkness upsets the just estimate of time and space; minutes expand into hours, distances are greater, and the road seems interminable. Men who are bold in the light grow timid in the dark. Even with insensible sick persons, as for example with typhus patients, darkness increases the delirium or heralds its approach if it is not already present. In short, light regulates and calms mental activity; darkness perverts and excites it. Even sensation is excited and a moderate measure of pain becomes unendurable in the dark. The general facts, as above stated, have led to the conclusion that the nervous excitability and nervous energy in civilized man is due in great part to the exclusion of the light not only from the eyes but also from the skin on which it exerts a healthy action. The climate of Northern Europe would hardly favor our going back to the habits of our barbarian ancestors, but it would certainly be more conducive to the health of our children, if they lived more in the open air, and with their hands and arms and neck and shoulders exposed. And since climate and fashion combined, prescribe the wearing of clothes which preclude all light from the skin, the next important point to attend to, is to provide wide streets and for the better lighting of our dwellings. It is desirable, too, to have the houses isolated villa fashion, so that light may fall on them from all sides. The lofty flat and apartment houses in New York and Chicago are by no means conducive to health. The windows of a dwelling house should be large enough to light up every corner, and should be shaded as little as possible, except only in summer when the direct sunlight becomes painful, and carpets and hangings should be light. "The dim religious light" which so many people like to cultivate in their homes, would not keep a plant alive, and is scarcely less prejudicial to man. However, these are social fashions which the physician is powerless to remedy. He can only hope that some leader of the fashion will take up the matter and guide the fashion in the direction of improvement. This half light is especially prejudical in the sleeping rooms which should be filled with sunlight on every occasion. The beds especially should be exposed to the full light as much as possible. The Italians show their appreciation of the physiological influence of light in the popular proverb, *Dove non viene il sole, viene il medico*, which may be rendered in English:

If you won't admit the sun,
For the doctor you must run.

—*Gartenlaube, Leipzig.*

THE GRIP.

A DIAGNOSIS THAT SUGGESTS FAMILIAR SYMPTOMS.

A writer in the *Western Medical Reporter* facetiously writes: Nature with a lavish hand has endowed the human body with no less than s'teen million of spots to which an ache or pain can be attached. When each one of these spots, both inside and out, is filled with a hard platinum tipped pain; when your head aches so that you are conscious of all the ruffles and scallops on your brain, just as you see them in the pictures in your physiology; when your heart thumps and your stomach wobbles and you have the feeling that something is wallowing through your inside works; when your sternum feels stove-in, and there is an uneasiness under your shoulder blades as though your wings were beginning to sprout; when you are one moment alive to the finger tips with thinking of the things you must get up and do, and the next completely exhausted by even the thought of doing them; when your backbone has the sensation of being twisted by a monkey wrench; when you are so dizzy that you can't see, and your ears ring and eyes water and your nose is in such a state that it is presumption to lay aside your handkerchief for one short minute; when you cough and sneeze and groan in turn—in fine, when you feel like the very deuce—you can set it down that you have the grip.

LOCAL DEFINITION.—Tommy: "What is a hold-over Senator?"—Mr. Fig: "The qualifications of a hold-over Senator vary in different States. In Kentucky he is expected to hold over half a gallon without staggering."

STERN DISCRIMINATION.—George: "Yes, sir; I cannot tell a lie—I did it."—Washington Senior: "Well, that's all right about the lie, but (whack!) d'ye think (whack!) you can tell a cherry-tree (whack! whack!) next time?"

HAD NO CHANCE.—"Your husband," said the caller, sympathizingly, "was a man of many excellent qualities." "Yes," sighed the widow. "He was a good man. Everybody says so. I wasn't much acquainted with him myself. He belonged to six lodges."

ALPINE GLACIERS.—A recent survey has established the number of glaciers in the alps at 1,255, of which 249 have a length of more than 4¾ miles each. The French Alps contain 144 glaciers, those of Italy 78, Switzerland 471 and Austria 462.

FUTURE MOTORS.—Professor Thurston says: "The assumption seems fair that the locomotive engine will have been superseded when we double our speeds, and that we must find ways to utilize the weights of the cars themselves for adhesion and to make each to carry its own motor."

SELECTING MELONS.—It is quite an art to select a choice melon without cutting a small hole through its fat green sides, but it can be done; the same as an expert can tell a counterfeit from a genuine bill—by the feeling and general appearance. The dark green of the melon should be the color of the English ivy leaves; the yellowish spot underneath caused by its contact with the earth should be tested with the pressure of the finger. The spot should have a springy resistance, and the indentation thus made should not be noticeable when the finger is removed. If it remains the melon is too ripe and likely to be watery. If no depression can be made the melon is not ripe enough.

ENORMOUS MICROSCOPE.—The Poeller Physical Optical Institute, of Munich, have under construction an enormous microscope for exhibition at Chicago in 1893. It will magnify to 16,000 diameters, or, as ordinarily fitted, to 11,000 diameters. An electric light of 11,000 candle-power is to be used for illuminating the image, which is to be projected on a screen. As the heat from this powerful light would derange the focus by expansion of the metal, an ingenious device is used to cool the metal. This is a small copper cylinder filled with liquid carbonic acid under a pressure of 350 pounds to the square inch. It is connected with the microscope in such a manner that an electric regulator automatically opens a valve and allows a drop of the acid to escape in a spray on the metal to be cooled. The liquid immediately evaporates and produces intense cold. The whole cost of the instrument is said to be nearly $10,000.—*Scientific American.*

LUNAR LANDSCAPES.—The effect of the absence of an atmosphere on the moon is that there are none of the finer gradations of light in lunar landscapes which make our terrestrial scenes so soft and pleasing to the eye. On the moon an object is either bathed in intense sunlight or else is invisible in the blackness of night. Shadows are absolutely black, and objects in the shade are not visible. Stars shine in a black sky, and are not dimmed when the sun rises above the lunar horizon. The sun must be a glorious object, his corona and the red hydrogen flames must be clearly shown and sharply defined against the black sky. Myriads of stars that are invisible in our atmosphere-obscured skies must be visible there. Intense silence reigns supreme. The rocks in sunlight must be so hot that water would hiss if transported thither and dropped on them, while those in the shade must be as icy cold as space itself. The picture which the conditions that obtain on the moon conjure up is one of absolute and awful desolation.

BRIGHT STORIES.

A MYSTERIOUS GUEST.

From the French of Honore de Balzac.

(*Concluded from page* 485.)

The merchant summoned up all the keenness which he had formerly employed in his commercial affairs. He gave the Countess the most prudent and sagacious directions, and after having agreed together as to everything they both were to say and do, the old man invented a plausible pretext for visiting all the principal houses of Carentan. He announced in each that he had just seen Madame de Dey, and that she would hold her reception that evening, in spite of her indisposition. In the cross-examination which each family subjected him to on the nature of the Countess's malady, his keenness was a match for the shrewd Normans. He managed to start on the wrong track almost every one who busied themselves with this mysterious affair. His first visit did wonders; it was to an old lady who suffered from gout. To her he related that Madame de Dey had almost died from an attack of gout on the stomach, and went on to say that the famous Tronchin having formerly prescribed, on a similar occasion, the skin of a hare flayed alive to be laid on the chest, and for the patient to lie on bed without stirring; the Countess, who was in imminent danger two days before, after having scrupulously carried out Tronchin's extraordinary prescription, now felt sufficiently convalescent to receive any one who liked to visit her that evening. This tale had an enormous success, and the doctor of Carentan, himself a royalist *in petto*, increased its effect by the earnestness with which he discussed the remedy. However, suspicion had taken too deep root in the minds of certain obstinate or philosophic persons to be entirely dissipated; so that evening the guests of Madame de Dey were eager to arrive at her house at an early hour, some to spy into her face, some out of friendship, and most from astonishment at her marvellous cure. They found the Countess sitting in her salon at the corner of the large chimney-piece.

Her room was almost as severe as the salons of Carentan, for to avoid wounding her narrow-minded guests she had denied herself the pleasures of luxury to which she had been accustomed before, and had made no changes in her house. The floor of the reception room was not even polished; she let the old dingy stuffs still hang upon the walls, still kept the country furniture, burnt tallow candles, and in fact followed the fashions of Carentan. She had adopted provincial life without shrinking from its cruelest pettinesses or its most disagreeable privations. But knowing that her guests would pardon her any expenditure conducive to their own comfort, she neglected nothing which could afford them personal enjoyment: at her house they were always sure of an excellent dinner. She even went so far as to feign avarice, to please their calculating minds, and led them on to disapprove of certain details as concessions to luxury, in order to show that she could yield with grace.

Towards seven o'clock in the evening the upper middle-class society of Carentan was assembled at her house, and formed a large circle round her hearth. The mistress of the house, supported in her trouble by the old merchant's compassionate glances, submitted with unheard-of courage to the minute questionings and stupid, frivolous talk of her guests. But at every rap of the knocker, and whenever a footstep sounded in the street, she could scarcely control her emotion. She raised discussions affecting the prosperity of the district, and such burning questions as the quality of ciders, and was so well seconded by her confidant that the company almost forgot to spy upon her, the expression of her face was so natural and her assurance so imperturbable. However, the Public Prosecutor and one of the Judges of the Revolutiunary Tribunal kept silence, watching attentively the least movement of her features, and listening, in spite of the noise, to every sound in the house. Every now and then they would ask some question calculated to embarrass her, but these she answered with admirable presence of mind. She proved how great a mother's courage can be.

After having arranged the card-tables, and settled every one to boston, reversi, or whist, Madame de Dey still remained, talking with the greatest nonchalance to some young people; she played her part like a consummate actress. Presently she led them on to ask for loto, pretended to be the only person who knew where it was, and left the room.

"*Ma pauvre Brigitte*," she cried, "I feel almost suffocated."

Her eyes were brilliant with fever and grief and impatience, as she dried the tears which started quickly from them. "He is not coming," she said, looking into the bedroom unto which she had come. "Here I can breathe and live. But in a few minutes more he will be here! for he is alive—I am certain he is alive! My heart tells me so. Do you not hear something, Brigitte? Oh, I would give the rest of my life to know whether he is in prison or walking across the country. I would give anything not to think."

She looked round once again to see if everything was in order in the room. A good fire burned brightly in the grate, the shutters were shut close, the furniture was polished until it shone again; the very way in which the bed was made was enough to prove that the Countess herself as well as Brigitte had been busy about the smallest details. Her hopes too were manifest in all the delicate care that had evidently been spent upon this room. The scent of the flowers she had placed there seemed to shed forth, mingled with their own perfume, the gracious sweetness and the chastest caresses of love. Only a mother could thus have anticipated a soldier's wants, and prepared him such complete satisfaction of them. A dainty meal, choice wines, slippers, clean linen—in short, everything necessary or agreeable to a weary traveller were collected together, that he might want for nothing, and that the delights of home might remind him of a mother's love.

The Countess went and placed a seat at the table, as if to realize her prayers and increase the strength of her illusions. As she did so she cried, in a heart-rending voice, "Brigitte!"

"Ah, Madame, he *will* come; he cannot be far off. I am certain that he is alive and on the way," replied Brigitte. "I put a key in the Bible, and rested it on my fingers, while Cottin read the Gospel of St. John—and, Madame, the key did not turn."

"Is that a sure sign?" asked the Countess.

"Oh, Madame, it's well known; I would stake my soul that he is alive. God would never deceive us like that."

"In spite of the danger he will be in here! Still I long to see him."

"Poor Monsieur Auguste!" cried Brigitte, "no doubt he is on the roads, on foot."

"Hark! that is eight striking," exclaimed the Countess in terror.

She was afraid that she had stayed too long in the room, but there she could believe that her son still lived when she saw everything bear witness to his life. She went down-stairs, but before going into the salon she waited a moment under the colonnade of the staircase, and listened for some sound to awaken the silent echoes of the town. She smiled at Brigitte's husband, who kept watch like a sentinal; his eyes seemed stupefied with straining to catch the murmurs of the *Place* and the first sounds of the night. Everywhere and in everything she saw her son.

A moment afterwards she had returned to her guests affecting an air of gaiety, and sat down to play at loto with some girls. But every now and then she complained of feeling unwell, and went to recline in her easy-chair by the fireplace.

Such was the situation, material and mental, in the house of Madame de Dey. Meanwhile, on the high road from Paris to Cherbourg, a young man clad in a brown carmagnole, a costume in vogue at this period, directed his steps towards Carentan.

In the commencement of the *Requisitions* there was little or no discipline. The exigencies of the moment scarcely allowed the Republic to equip its soldiers fully at once, so that it was nothing unusual to see the roads full of *requisitionnaires* still wearing their civil clothes. These young men arrived at the halting-places before their battalions, or remained there behind them, for the progress of each man depended on his personal capability of enduring the fatigues of a long journey. The traveller in question found himself considerably in advance of a battalion of *requisitionnaires* which was on its way to Cherbourg, and which the Mayor of Carentan was waiting for from hour to hour, to billet on the inhabitants. The young man walked with heavy steps, but still he did not falter, and his gait seemed to show that he had long been accustomed to the severities of military life. Though the moon shed her light upon the pastures arouud Carentan, he had noticed a thick white bank of clouds ready to cover the whole country with snow. The fear of being caught in a hurricane no doubt hastened his steps, for he was walking at a pace little suited to his weariness. He carried an almost empty knapsack on his back, and in his hand a box-wood stick, cut from one of the high thick hedges which this shrub forms round most of the estates of Lower Normandy.

The towers of Carentan, thrown into fantastic relief by the moonlight, had only just come into sight when this solitary traveller entered the town. His footfall awakened the echoes of the silent streets. He did not meet a creature, so he was obliged to inquire for the house of the Mayor from a weaver who was still at work. The Mayor lived only a short distance off, and the *requisitionnaire* soon found himself under shelter in the porch of his house. Here he applied for a billet order and sat down on a stone seat to wait. However, the Mayor sent for him, so he was obliged to appear before him and become the object of a scrupulous examination. The *requisitionnaire* was a foot soldier, a young man of fine bearing, apparently belonging to a family of distinction. His manners had the air of gentle birth, and his face expressed all the intelligence due to a good education.

"What is your name?" asked the Mayor, casting a knowing glance at him.

"Julien Jussieu," replied the *requisitionnaire*.

The magistrate let an incredulous smile escape him. "And you come—"

"From Paris."

"Your comrades must be some distance off," replied the Norman in a bantering tone.

"I am three leagues in front of the battalion."

"No doubt some sentiment draws you to Carentan, *citoyen requisitionnaire?*" said the Mayor with a shrewd look. "It is all right," he continued. The young man was about to speak, but he motioned him to be silent and went on, "You can go, *Citoyen Jussieu!*"

There was a tinge of irony discernible in his accent, as he pronounced these two last words and held out to him a billet order which directed him to the house of Madame de Dey. The young man read the address with an air of curiosity.

"He knows well enough that he hasn't got far to go; when he's once outside he won't be long crossing the *Place!*" exclaimed the Mayor, talking to himself as the young man went out, "He's a fine bold fellow; God help him! He's got an answer ready to everything. Ay, but if it had been any one else but me, and they had demanded to see his papers,—it would have been all up with him."

At this moment the clocks of Carentan struck half-past nine. In the ante-chamber at Madame de Dey's the lanterns were lighted, the servants were helping

their masters and mistresses to put on their clogs and *houppelandes* and mantles, the card players had settled their accounts, and they were all leaving together, according to the established custom in little towns.

When they had exhausted all the formularies of adieu and were separating in the *Place*, each in the direction of his own home, one of the ladies observing that that important personage was not with them, remarked, "It appears that the Prosecutor intends to remain."

As a matter of fact, the Countess was at that moment alone with that terrible magistrate; she waited, trembling, till it should please him to depart.

After a long silence, which inspired her with a feeling of terror, he said at last, "*Citoyenne*, I am here to carry out the laws of the Republic."

Madame de Dey shuddered.

"Hast thou nothing to reveal to me?" he asked.

"Nothing," she replied, in astonishment.

"Ah, Madame," cried the Prosecutor, sitting down beside her and changing his tone, "at this moment one word could send us—you and me—to the scaffold. I have watched your character, your mind, your manners too closely to share in the mystification by which you have succeeded in misleading your guests this evening. You are expecting your son, I have not the least doubt of it."

The Countess made an involuntary gesture of denial; but she had grown pale, the muscles of her face had contracted under the necessity of displaying a coolness she did not feel; the pitiless eye of the Prosecutor had not lost one of these movements.

"Well! receive him," replied this magistrate of the revolution, "but do not let him remain under your roof after seven o'clock in the morning. To-morrow at daybreak I shall come to your house armed with a denunciation which I shall get drawn up."

She looked at him with a bewildered, numbed look that might have drawn pity from a tiger.

"I shall demonstrate," he continued sweetly, "the falsity of this denunciation by a careful search. You will then be screened by the nature of my report from all ulterior suspicions. I shall speak of your patriotic gifts, your *civism*, and we shall be saved."

Madame de Dey suspected a snare; she remained motionless, her tongue was frozen and her face on fire. The sound of the knocker echoed through the house.

"Ah," cried the mother as she fell in terror upon her knees, "save him! save him!"

The Public Prosecutor cast a passionate glance at her.

"Yes, let us save him," he replied, "even at the cost of our own lives." He raised her politely.

"I am lost," she cried.

"Ah, Madame!" he answered, with an oratorical gesture, "I would not owe you to anything—but to yourself alone."

"Madame, he's——" cried Brigitte, thinking her mistress was alone.

At the sight of the Public Prosecutor, the old servant, who had burst in, beaming with joy, grew pale and motionless.

"Who is it, Brigitte?" asked the magistrate, with an air of gentle intelligence.

"A *requisitionnaire* sent us from the Mayor's to lodge," answered the servant, showing him the billet order. The Prosecutor read the paper. "True," said he; "a battalion is coming to us to-night." He went out.

At that moment the Countess had too much need to believe in the sincerity of her former attorney for the least doubt of it to cross her mind!

Though she had scarcely the power to stand, she ascended the staircase precipitately, opened the door of the room, saw her son, and threw herself half dead into his arms. "My child, my child," she sobbed, almost beside herself, as she covered him with kisses.

"Madame!" said a stranger's voice.

"Ah, it is not he!" she cried, recoiling in horror, She stood upright before the *requisitionnaire* and gazed at him with haggard eyes. "My good God, how like he is!" said Brigitte. There was a moment's silence; even the stranger shuddered at the sight of Madame de Dey.

The first blow had almost killed her, and now she felt the full extent of her grief. She leant for support on Brigitte's husband. "Ah, Monsieur, she said, "I could not bear to see you any longer. Allow me to leave you for my servants to entertain."

She went down to her own room, half carried by Brigitte and her old manservant. "What! Madame," cried the housekeeper, as she led her mistress to a chair; "is that man going to sleep in Monsieur Auguste's bed, and wear Monsieur Auguste's slippers and eat the pastry that I made for Monsieur Auguste? If I was to be guillotined for it, I——"

"Brigitte!" cried Madame de Dey.

Brigitte was mute.

"Hold thy tongue, chatterbox," said her husband in a low voice. "Dost want to kill Madame?"

At this moment the *Requisitionnaire* made a noise in his room as he sat down to the table.

"I cannot stay here," cried Madame de Dey. "I will go into the conservatory; I shall be able to hear better there what goes on outside during the night."

She was still tossed between the fear of having lost her son and the hope of seeing him come back to her.

The silence of the night was horrible. The arrival of the battalion of *Requisitionnaires* in the town, when each man sought his lodging, was a terrible moment for the Countess. Her hopes were cheated at every footfall, at every sound; presently nature resumed her awful calm.

Towards morning the Countess was obliged to return to her own room.

Brigitte, who was watching her mistress's movements, not seeing her come out, went into the room and found the Countess dead.

"She must have heard that *Requisitionnaire*," cried Brigitte. "As soon as he has finished dressing, there he is, marching up and down Monsieur Auguste's bedroom, as if he were in a stable, singing their damned *Marseillaise!* It was enough to kill her."

The death of the Countess was due to a deeper sentiment, and doubtless caused by some terrible vision. At the exact hour when Madame de Dey died at Carentan, her son was shot in le Morbihan.

We may add this tragic event to all the evidence of sympathies ignoring the laws of space, which has been collected through the learning and curiosity of certain recluses. These documents will some day serve as the groundwork whereon to base a new science—a science which has hitherto lacked its man of genius.

HOW IT GOT INTO PRINT.

A Story of a Canadian Village.

Walter Blackburn Hart in the *Boston Transcript*.

A stranger in St. Barthelemi chancing to saunter into the Revere House, and hearing old Peter Runians, the proprietor of the hotel, bawling out at the top of his cheery stentorian voice for "Topsy," might very naturally expect to catch the rustle of starched feminine petticoats on the winding staircase, or in the narrow hallway leading to the public dining-room and the region of pots and pans, followed by the appearance of a stout, red-cheeked Canadian lass.

But "Topsy" was a boy.

Everybody in St. Barthelemi knew "Topsy;" indeed, his fame was not confined within the narrow limits of his native village. "Topsy" of St. Barthelemi was a familiar character in almost every inn parlor in the villages and towns along the St. Lawrence up to Montreal. In the roar of the great city "Topsy" lost his identity—which was only to be expected—though Peter Runians, in his infrequent visits to the city, found the fact very hard to understand. But the regular boarders, and those guests who had experienced the old-fashioned hospitality of the Revere House on previous occasions, all knew whom to expect in answer to the loud, imperative summons that rang through the house so often. Old Runians never seemed happy unless the boy was about him.

An almost involuntary lull took place in the conversation of the bar-room whenever "Topsy" was called, and the loungers listened for the quick patter of his little iron-tipped crutch, as the boy hurried responsive to the call. When he was a little fellow of five years old, "Topsy" had lost his left leg from the knee down through an accident with a mowing machine at harvest time, but he managed to fly along with his crutch like a whirlwind. All had learned to love and pity the poor little cripple, and his quickness of parts had won for him a reputation as an intellectual prodigy. Old Peter Runians used to roar out "Topsy! Topsy!" like a devouring lion; but the gruffness of his voice was merely a kind of occult humor, startling enough to strangers, but quite transparent to the boy and all the regular customers of the place. The old lion used to smile as he roared; and often, as he bent over the unabashed "Topsy," with his heavy brows knit sternly, he would roll out, "You darned little scoundrel, yer, what 'ev you bin doin'?" and then suddenly lifting the boy off his feet, he would shake him in the air as fondly and tenderly as a mother does her babe.

In the evening, when the bar-room was full of men, some one would inquire for "Topsy," and Peter would bawl until he made his appearance.

"What d' ye mane niglictin' the business?" Runians would demand, in a voice of thunder, when the little face was on a level with the counter. Come here!" and he would suddenly dive over the counter and lift the boy onto his shoulder. Then "Topsy" would sing songs for the company—simple old sentimental ditties taught him by Mrs. Runians, which sounded very strange in such a place—or he would repeat some of his "larnin'," as old Peter phrased it to a strange gentleman. Peter had been in his younger days the skipper of a collier sailing between London and Newcastle, and his language was full of those coarse and vain repetitions usual with men whose vocabulary contains no adjectives except oaths. But for all his gruff voice and coarse speech, old Peter Runians was one of the kindliest and most charitable men in the whole Province of Quebec. He and his wife Becky were childless, and they loved the little cripple, each after his own fashion, as a son.

"Topsy's" father had been a cobbler in St. Barthelemi—a drunken ne'er-do-well, whose quarrelsome temper lost him all his custom, and reduced him to the greatest straits of poverty. Mr. Joseph Joselin had not been seen or heard of in St. Barthelemi since the birth of his boy. He had suddenly disappeared, leaving his sick wife and infant child to face the world friendless and penniless. The mother died soon afterwards in destitution, with but one regret, that her poor babe still lived, and that she had to breast the shadowy tide of death alone. It was just about this time that Peter Runians became the host at the Revere House, and he heard of Mrs. Joselin's death.

One winter's evening he walked into his wife's kitchen, stamping the snow from out the chinks of his big felt overshoes, and making great puddles on the spotless white floor wherever he stepped. He had on his fur cap, encrusted with snow and ice, and his overcoat bulged out so that he could not button it across. He went straight to the stove, the door of which was open, and shook himself in the red glare as he pulled the icicles out of his great brown beard. Mrs. Runians was making piecrust, with her sleeves rolled up to her elbows, and she looked up in surprise, and, for once, with a little displeasure. Her husband was seldom seen in her especial domain, but such an entrance was quite unprecedented.

"Why, what's the matter, Peter?" she asked, pounding away at the dough on the table before her, in order to relieve her feelings.

Peter laughed, and threw open his great coat.

"This is about the biggest surprise ye iver had in yer life, I guess, Becky. I've got a little prisint for ye," and he strode across the room and put little John Joselin into her floury arms. The child opened its eyes at the moment of the transfer and looked up into Mrs. Runian's bewildered face, and then began to whimper.

"Well, 'pon my word, Peter—"

"There, there, Becky, hush the babe! The mither's gone, and he's a bright brat—like his poor mither. Take him up-stairs and put him in our bed. It's mighty cold out-doors to-night—twenty below, or I'm a Dutchman"—and he stretched his hands to the grateful warmth of the crackling pine logs.

"I never heard of such a thing in all my born days!" said Mrs. Runians, with the instinctive conservatism of a woman. "You are—" Peter put his arms round her waist and stopped her with a kiss. It was a rare exhibition of tenderness for him, and as an argument it was infallible.

"We're a pair of fools, Becky! that's what your father said when we married—d'ye remimber?—but, to my thinking, we get more out of our foolishness than the wise folk know of.

"There y' are with your blarneying and spooning, Peter," said Mrs. Runians, flushing with pleasure, and she turned and took the child up-stairs without another word.

The child cried a little at finding himself amid strange surroundings—the big, old-fashioned bed, with its heavy curtains, frightened him—but Mrs. Runians fondled him to sleep against her bosom. When she returned to her kitchen she found her husband still standing with his back to the fire, looking unusually thoughtful. There was something of the fussy air of a young matron about her, too, which made her eyes brighter than ordinarily. She went to him and laid her hand on his arm.

"Ah, if we had but a bairn of our own, dear, I should—"

"Tush, Becky, we'll make the boy our own! You'll be more than a mither to him, I know—I'm only afraid you'll spile him."

"And you?" laughing.

"Oh, I'll bring him up quite kerreck. You don't know me, Becky: I'm a stern man with childer; it does 'em good."

There was nothing more said about the matter. Peter Runians and his wife, in their connubial felicity, were a refutation of the popular superstition that a childless couple are bound to be always quarrelling. They never had any serious differences, and as for arguments, all their pet prejudices were held in common, and their desires were so simple that they never demanded any considerable concession on either side. During their long married life they had learned to think alike on most things.

And so "Topsy" grew up to regard old Peter Runians and his wife as his parents, and Mrs. Runians loved him as mothers love an only child, and as mothers alone know how to love.

As a rule St. Barthelemi was one of the dullest little villages along the St. Lawrence, if, indeed, it had not the honor of being superlatively ahead of all competitors in this particular.

But at last something happened at St. Barthelemi, and for weeks the tension of excitement was almost unbearable. That something had really happened—and something of real interest and importance—was sufficiently attested by the presence of a dozen newspaper reporters at the Revere House. They all arrived on the last train one night from Montreal, like a fall of snow, silently, and without warning, and the next morning St. Barthelemi saw itself in print. The fact of the village having a local occurrence of consequence completely paralyzed such industries as was indigenous to it and the immediate vicinity. The boarders at the hotel were surrounded by the reporters, and became condescending and important. Every one in the house devoured his or her meals with bated breath, as if every moment not spent in congregating round the big, dome-shaped stove in animated discussion of the event, and the probabilities of—but that is irrelevant—was an insult to time.

(*Concluded next week.*)

ELECTRICAL EQUIVALENTS.

THE DIRECT CONVERSION OF HEAT INTO ELECTRICITY.

In the annual report of the Berlin Academy of Science for 1891 appears a paper on the subject named in our heading, by Dr. R. J. Gulcher, of which the following is an abstract: That electric currents can be developed by the direct application of heat to the junction of two different metals, which is the fundamental principle of the thermopile, was discovered by Seebeck in the year 1823. As regards the theory of the subject, Clausius suggested in 1880 that "by the molecular motion, which is termed heat, electricity is driven from one material to the other;" and Kohlrausch's theory of 1875 is somewhat similar in assuming that the electric current is in some way connected with the flow of heat, and *vice versa*. The discoveries of later years, culminating in the researches of Hertz, prove, however, that the electric current is merely the result of a certain vibratory motion of the luminiferous ether, and, therefore, in accordance with the principles of the conservation of energy, a certain definite quantity of electricity without either loss or gain of energy, and it is this meaning that is given to the subject of this paper, conversion by a dynamo machine being termed "indirect." Proceeding then to calculate the absolute efficiency of the ordinary means of producing the electric current by a steam-driven dynamo, the electric energy developed is shown to be only 6.4 per cent of the energy existing in the coal burnt in the boiler; but even this low efficiency is eighteen times greater than the direct conversion of heat into electricity as furnished by a Noe and Clamond thermo-battery, where the efficiency works out at only 0.35 per cent. of the mechanical equivalent of the gas burnt. If the high efficiency of the dynamo and steam engine in themselves, as manufactured at the present day, be considered, it is clear that not much greater results can be expected in that direction, and the author has for some years been experimenting in other directions, therefore, for the direct conversion of heat into electricity. The principal idea acted on at first was the heating of a certain metallic salt in a platinum crucible, which should form the positive pole of the element, and a carbon rod immersed in the molten substance, the negative pole; this substance would part with its oxygen to the carbon, and then be reoxidized by contact with the air; and with this form of apparatus, a mixture of caustic soda and carbonate gave an electro-motive force varying between 0.475 and 0.4 volt, the "sodium blast" generated at the carbon point burning at the surface with its characteristic yellow flame, accompanied with slight explosions. For the similar potash salts the electro motive force was between 0.4 and 0.31 volt, the flame being violet and the burning more violent, and forming a small display of fireworks. The adoption of lead oxide resulted in a momentary high electromotive force, and then a sudden collapse of the platimum crucible, owing to the metallic lead reduced falling to the bottom and eating through the platinum. The author was surprised also to find that at the junction of the platinum connection wire the crucible was also severely pitted, as the current had never been short-circuited, and he has no valid explanation to offer therefor. After these experiments, the results of which did not promise any simple solution of the problem, the author set himself to improve, if possible, the thermo battery, and for which purpose attention was directed to the following particulars: 1. The adoption of durable materials. 2. That the electro-motive force and specific conductivity should be as high as possible. 3. Improvements in the form of the element. 4. Improvements in the application of the heat, *i. e.*, a higher efficiency in the production of the heat itself. Subsulphide of copper, in spite of its high electro-motive force, gave, on account of high specific resistance, a weaker current than materials which gave only half its electro-motive force, and it was also found that, by a species of dry electrolysis, granules of metallic copper were formed throughout the body of the material, and its use was, therefore, discarded. A form of battery is described, and which was exhibited at the meeting, consisting of tubes of nickel and a special antimonial alloy, which was found to be very durable. This consisted of fifty elements in series united in one casing, and gave an electro motive force of 3.5 volts, and an internal resistance, when hot, of 0.4 ohm, with a consumption of 7¼ cubic feet of gas per hour, and the absolute efficiency is 1.08 per cent. or three times that of the existing thermo-batteries. Such a battery is almost exactly equivalent to two Bunsen elements, and though it is far below the dynamo in efficiency, still it may be suitable for various small installations and for experimental work, owing to complete absence of polarization, as the electro-motive force does not fall on short circuit. The durability is enhanced by a regulator applied to the gas supply to prevent any accidental overheating. The author concludes by stating that the hopes to produce cells which are the outcome of still later researches, and in which the efficiency has been raised to over 5 per cent., and thus almost capable of competing with the dynamo. The description of the construction is withheld; but it is stated that one form is capable of continuously furnishing current for eight 16-candle power lamps at a consumption of 4.5 lb. of coke per hour. This success the author hopes still further to advance, and thereby exceed the efficiency of the dynamo system as a converter of heat into electrical energy.

OLD-TIME DELICACIES.

THE MENU OF A DINNER IN THE SIXTEENTH CENTURY.

A dinner was given in November, 1589, by Marcantonio Colonna, Grand Constable of Naples, on his marriage with the Princess Orsini Peretti, niece of Pius V., at which several Cardinals were present. On the plates were little figures of boys holding shields, on which were the arms of the guests—so that they could find their places without causing confusion—and cupids and angels holding labels, with amorous mottoes and nosegays. The first course of the "Credenza" was of twenty-one dishes, including salads of radishes, capers and kid's feet, heads of wild boars boiled in wine, with their snouts silvered and artificial fire issuing from them, garnished with herbs and flowers; salted buffalo tongues boiled in wine, cock pheasants on their feet, as if alive, and holding perfumes in their beaks, and roast peacocks served with a sauce made of pomegranates and lemons, their beaks and feet gilt and their beautiful necks and tails displayed. In the first course of hot meats were the most delicate birds—ortolans, pheasants, woodcocks, larks, and "tordi" (fieldfares); in the second, of twenty dishes, calves' heads with stuffing, roasted on the spit; bologna sausages, capons stuffed with chestnuts, roast red-legged partridges in paper garnished with sour oranges, roast gray partridges stuffed in the Spanish fashion and sprinkled with rosewater, and a sweet dish called "bocchi di dame" (ladies' mouths), made by the nuns. The third course was of eighteen dishes, among which were pheasants stuffed with truffles, olives and

fresh fennel, garnished with sour oranges and fennel, roat sucking pigs, peacocks larded with lampreys and stuffed with truffles, Indian pigeons, large truffles surmounted by imperial crowns, tender crabs, eaten with salt and vinegar, with a ducal coronet upon each, and lobsters crowned with the papal tiara. The second course of the "Credenza" consisted of twelve dishes, among which were entire truffles served in napkins, and sweet fennel and thistles served with butter in silver plates and garnished with sour oranges and ginger. After the dinner was handed round sweetmeats from different parts of Italy, such as preserved fruits from Genoa, which is still renowned for them, quince-cheese of Naples, "vasetti" from Bologna, "persicata" (peach-cheese), also from Genoa, little boxes (of comfits) from the Romagna, sticks of cinnamon from Bergamo, and bon-bons from Foligno, and Portuguese marmalade.

DOMESTIC DIETETICS.

SPECIALLY PREPARED FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

October.

MEATS.—Beef, mutton, ham, kidneys, liver, venison, sausage.

GAME AND POULTRY.—Pigeon, chicken, duck, woodcock, brant, grouse, partridge, rabbit, snipe, goose.

FISH.—Bass, blackfish, bluefish, clams, cod, crabs, eels, carp, catfish, flounder, halibut, herrings, lobster, mackerel, mussels, oysters, pike, porgie, prawn, rockfish, salmon, sea bass, sturgeon, smelt, turtle, white fish, whiting.

VEGETABLES.—Artichokes, beets, beans, broccoli Brussels sprouts, cabbage, carrots, cauliflower, corn, cucumbers, egg-plant, garlic, lettuce, onions, parsley, parsnips, potatoes, radishes, rhubarb, savoy, shallots, spinach, squash, tomatoes, turnips, watercress.

FRUITS.—Apples, bananas, blackberries, grapes, melons, oranges, peaches, pears, pineapples.

PRACTICAL RECIPES.

CHICKEN SOUP.—Clean a fowl and put it over a slow fire, with a sliced onion, a coarse stalk of celery, a turnip, and three quarts of water. When the fowl is nearly done add a teacup of rice. When the rice is done carefully take out all the other vegetables and the chicken; cut the breast from the fowl and pound it up, and put it back in the soup. Beat up four egg-yolks, mix them with some cream, and add them to the soup, when it is not quite boiling; season with salt pepper and serve.

ITALIAN RICE.—Chop up an onion and fry it brown in a good piece of butter, stirring constantly; then add three pints of broth, a bay leaf and a pound of rice, washed and picked over. Cover and cook steadily and gently until nearly all the liquid is gone; then take it from the fire and add to it a pinch of red pepper, some tomato sauce, a quarter of a pound of butter, and a quarter of a pound of grated cheese. Cover and set on the back of the stove for five minutes, then serve.

SPICED BAKED PEARS.—Having selected fine pears, wash them, place them in a baking pan, and pour over them a pint of sugar and a pint of water; put another pan over them and bake until tender. Heat to the boiling a quart of vinegar, four cupfuls of granulated sugar, and a teaspoonful each of whole cloves and fine bits of cinnamon bark. Fill your jars with the tender pears, and cover them with this syrup and seal.

PINK AND YELLOW FROSTING.—To color frosting pink add to it a little red jelly, preserve juice, cranberry syrup or cochineal. To give a yellow color halve an orange and squeeze out the juice, cut the yellow part from the rind and put it to soak in the juice; let it lie for half an hour, then squeeze the juice through a muslin bag and add it to the frosting.

SOFT MOLASSES CAKE.—One cupful molasses, half a cup hot water, two and a half cupfuls flour, two tablespoonfuls butter, one egg, ginger, one teaspoonful soda.

JUMBLES.—One cupful sugar, half a cup butter, two eggs; flour to roll out.

APPLE MOLD.—Put in a copper preserving kettle one and a half pounds lump sugar and three cupfuls of water, and cook over a brisk fire until it is crisp, when you try it in cold water. For this amount have ready two dozen apples, pared and sliced; put them into the sugar and cook them, stirring constantly until they are reduced to a marmalade. Oil a mold with a hole in the centre, and fill the mold with the apples; shake them down well and set where they will get very cold; then turn them out on a glass dish, fill up the centre with whipped cream, flavored with orange flavor, and serve.

ALASKAN EXPLORERS.

LIEUT. SCHWATKA'S EXPEDITION UP THE YUKON RIVER.

Advices from Victoria, B. C., dated Oct. 7, describing the exploring trip of Lieut. Schwatka, Dr. Hayes and party into unknown portions of Alaska are full of interest. On leaving Juneau the party, with several Indians, proceeded in canoes up the Yukon River till they reached its source, at Disella. There they disembarked and went on foot in a northwesterly direction, striking in five days the eastern end of great Aklene Lake. There they secured guides, and after despatching letters, got into canoes again and paddled the whole length of the lake till they reached its outlet, really one of many branches of the great Yukon River. It was from this point that the adventurous part of the journey dates. In a single canoe Lieut. Schwatka, accompanied by Dr. Hayes and a white hunter, started down the fork and after several days of hard work got into Lewis River, another branch of the Yukon. The party then got to Fort Selkirk. Here Schwatka fell in with seven American miners, who were waiting for the river to go down before commencing work. A small tribe of Indians was then hired to pilot the explorers in a southeasterly direction, and they struggled on for several days until the magnificent ranges of Stelias hove in sight. There the Indians warned the travelers against attempting to proceed any further in the same direction. Schwatka refusing to listen to their counsel and deciding to keep right on, the Indians left them. They pushed on again, every day bringing them nearer to hills, never before gazed upon by white men. As they approached the foot of one of the smallest mountains it really seemed utterly impossible that they would be able to make a passage. But they went on, up heights, over glaciers and rushing rivers, and in two days had journeyed into the heart of the range. At one place it was only the lucky discovery of a bear trail in the beavy brush that enabled them to proceed. It took five days to make the passage of the range. Bearings were taken, and after descending the mountains they made for the forks of Copper River. In four days they reached its source. After making a canoe of canvas and willow boughs they launched it on the tributary known as Chitty Stone. When they got into the big rapids the boat was upset three times. Then matters went from bad to worse. They kept on until, turning a sharp corner in the boiling torrent, there rose up in front of them two solid black walls, which formed an enormous canyon, through which the river rushed. Here they started on what was destined to be the most thrilling episode of the whole journey. The boat shot into the canyon with fearful rapidity and made from side to side like a shuttlecock. Dr. Hayes and a hunter were thrown out into the torrent, and were only recovered by supreme efforts. Nearly all the valuable instruments of the party were destroyed or lost. Then the boat glided into a beautiful wide stream. At the junction of this stream with the Copper River they met a tribe of Indians, just preparing to go to the mouth of the river to trade. The Delta being reached the party were transferred to the tannery on Prince William Sound, where they waited for the monthly mail steamer to Juneau. They arrived at Juneau in time to catch the Mexico, and reached here yesterday morning. The journey was a complete success. Valuable geological and horticultural specimens were obtained by Dr. Hayes, and Lieut. Schwatka has gathered a fund of information. The exploration opened up over seven hundred miles of new country.

ASTHMA AND GOOSE FEATHERS.

INCLUDING SOME REFLECTIONS UPON GOOSE INTELLECT.

"There isn't one pound of goose feathers used today where there were twenty pounds used ten years ago," said a dealer to a *Sun* reporter. "There are several reasons for this, the principal one being that the feather bed has gone entirely out of fashion. "Now, what do you suppose had a great deal to do with driving the feather bed out of favor? Asthma and hay fever. They have done more than any other thing to lessen the demand for feather beds and pillows, for it was discovered a few years ago that feather beds and asthma had a strong affinity for each other, and that nothing would start an asthmatic wheezing so quickly as a couch of goose feathers. Asthmatics were not long in finding it out, and the taboo of the feather bed and pillow extended to all parts of the country. The goose owes a great deal of its latter-day comfort to the asthma. That is, unless it is true that the plucking of feathers from a live goose is not accompanied by pain, as many people profess to believe, but I have very grave doubts of such being the fact. "Oh, yes. Feathers must be taken from live geese if the comfort and health of people who persist in their attachment to feather beds are to be considered. Dead feathers are as inelastic as husks, and are inimical to the health of the sleeper. New live feathers are by no means pleasant, but dead ones are simply unbearable to a sensitive person. A goose that is being plucked never utters a sound, and it is because of this that the impression prevails among all geese pickers that no pain attends the process. It is just as reasonable to say that it doesn't hurt a goose to yank the feathers by the handful out of the tenderest spots on a goose's body as it would be to say that it doesn't hurt a man to have his whiskers pulled out. I have heard people say that a goose rather enjoys being picked, the sensation being, they declare, something similar to that blissful feeling that overtakes a pig when you scratch his back. That is all nonsense. It hurts a goose terribly to be plucked, and the only reason that it doesn't make a fuss is that it doesn't seem to know enough. A goose will quack and cackle and clatter as if it were suffering more agony than a horse with the colic just at sight of you, but if you corner it up and pelt it with stones it seems to forget that it has a voice, and will take all the punishment you give it without making a noise. "There is much to study about a goose. Just take observation of a flock the first time you get the chance. They will amuse you for an hour. A goose positively has not the slightest idea of its height, depth or breadth. The statement that every goose that passes over the sill of an open barn door ducks its head, no matter if the door is twenty feet high, is as true as true can be. And while a goose will always believe that there is danger of its bumping its head as it passes over the sill of the

barn door, it is equally positive that it can creep through a two-inch knot hole in a fence. I have laughed myself sore more times than once at the persistence of some old goose in trying to enter an enclosure through a hole in a fence hardly big enough for her to get her head through, while a gate wide enough for a team of horses was open within three feet of the hole."

GERMAN PATENTS.—The new German patent law went into effect October 1. Under this law German patents can be applied for at any time within three months after issue of an United States patent. This liberal feature will prove highly beneficial to American inventors, as under the old law of 1877, the German application had to be lodged prior to the issue of the United States patent. Poor inventors can now have an opportunity to safely effect commercial arrangements in this country, and realize something from their inventions before undergoing the expense of a German patent.

BORROWING BOOKS.—We all have friends who need not be reminded how to handle books. They love them as we do. We shall not find their books opened face down on the table, thrown on the floor, or lying on a damp marble. We shall not discover our "tree calf" copy of "Ivanhoe" surmounted by a heap of cherry-stones. Our book-loving friends would be as shocked as we at those outrages which ignorant and unfeeling persons perpetrate against books. But our book-loving friends never wish to borrow! When a friend begs you to read a certain book and urges your use of his copy, your borrowing is perfectly justifiable; and this is the only case where it is. In such an instance the owner assumes all risk of loss or injury. These days of circulating libraries and cheap editions of all standard works render the borrowing of books absolutely inexcusable. Few persons who have not been put to the test realize the difficulty of refusing to lend some particularly cherished book. The only way to preserve one volume is to refuse to lend any. Then people will call you selfish. Those persons who never return borrowed books have not been mentioned, for they have no conscience at all, and should be allowed no quarter.—*Worcester Spy.*

A Tonic

Horsford's Acid Phosphate.

A most excellant and agreeable tonic and appetizer. It nourishes and invigorates the tired brain and body, imparts renewed energy and vitality, and enlivens the functions.

Dr. EPHRAIM BATEMAN, Cedarville, N. J., sasy:

"I have used it for several years, not only in my practice, but in my own individual case, and consider it under all circumstances one of the best nerve tonics that we possess. For mental exhaustion or overwork it gives renewed strength and vigor to the entire system."

Descriptive pamphlet free.

Rumford Chemical Works, Providence, R. I.

Beware of Substitutes and Imitations.

CAUTION:—Be sure the word "Horsford's" is on the label. All others are spurious. Never sold in bulk.

DIETARY REFORM.—Doctor: "I see just what is the matter with you. You need something strengthening. Eat a plate of oatmeal boiled, every morning, for breakfast." Patient: "I do, doctor." Doctor (equal to the occasion): "Then leave it off."—*Phar. Era.*

FORGETTING HISTORY.—A "sweet girl graduate" inquires of the Toledo *Blade*, "What macaroni is? Does it grow or is it made?" Great Cæsar! Have you never read American history? Do you not know how Yankee Doodle "stuck a feather in his hat and called it macaroni?" The ignorance of some people is wonderful.—*Dubuque Times.*

LATE SUPPERS.—Much has been said on this subject, but a recent consensus of opinion at a meeting of medical practitioners was the following: Brain workers should not go to bed supperless, but some nutritious, easily digested article should be eaten. A bowl of stale bread and milk, rice or farinaceous food, with milk or hot soup, was highly recommended.

COLOR OF OXYGEN.—Till now oxygen was believed to be as colorless in the liquid form as it is in the gaseous. But the Polish chemist, Olszewski, shows that it is only because thin layers of it have been examined that liquid oxygen has been believed to be with color. He has succeeded in getting a layer of it 30 millimetres thick, and he finds that it has a bright sky-blue color. The discovery is very important in point of view of the absorption spectrum of oxygen.

LANGUAGE AND DEVELOPMENT.—If all true science is based on facts, the fact remains that no animal has ever formed what we mean by a language; and we are fully justified, therefore, in holding with Bunsen and Humboldt, as against Darwin and Prof. Romanes, that there *is* a specific difference between the human animal and all other animals, and that that difference consists in language as the outward manifestation of what the Greeks meant by *logos*.—*Max Muller.*

ARTIFICIAL ASPHALT.—By heating resin with sulphur to about 250 deg. C., a reaction takes place, attended by the evolution of sulphureted hydrogen, and leading to the formation of an almost black pitchy substance containing sulphur and resembling Syrian asphalt in many of its properties. Thus it is insoluble in alcohol, but dissolves readily in chloroform and benzene, and is sensitive to light in the same way as Syrian asphalt, for which it can be substituted for photographic purposes.

SURPLUS PRODUCTION.—California has more than bountiful harvests this year. Not nearly all of her fruit can be disposed of, and the potato crop is so enormously large that thousands of bushels are being allowed to rot in the fields. A prominent grower says that in one district, near Sacramento, no less than 60,000 bushels of potatoes were not dug, because it would not pay to market them. Some of the growers ploughed up the potatoes and allowed them to remain on the ground as a fertilizer for the other crops which were put in.

HORSE-POWER.—To an inquiry how to compute the horse-power of an engine, the *Scientific American* replies: Multiply the square of the diameter of the cylinder by 0.7854, and this product by the mean pressure in the cylinder. The mean pressure, assuming the usual practice in small engines at five-eighths cut-off, will be 0.92 of the boiler pressure. Multiply the last product by the speed of the piston in feet per minute and divide by 33,000 for the horse-power. 2. How much power would an engine have that has a 3×5 inch cylinder, with 50 pounds pressure per square inch on the piston head, and making 100 revolutions per minute? A. For your engine this

$$\text{would be} \frac{3^2 \times 0.7854 \times 100 \times 0.92 \times \frac{5 \times 2}{12} \times 100}{33{,}000} = 1.6 \text{ h.p.}$$

Subscriptions $1 per year. Now is the time to subscribe.

ORIGINAL. No. 57.

Graham Muffins

BY MARIA PARLOA.

For twelve muffins there will be required half a pint of graham, half a pint of flour, one generous tablespoonful of sugar, one tablespoonful of butter, half a teaspoonful of salt, one teaspoonful and a half of Cleveland's Baking Powder, one egg, and two gills and a half of milk.

Mix the dry ingredients and rub through a sieve. Turn the bran from the sieve into the mixture. Beat the egg till light and add the milk to it. Stir this into the dry mixture. Add the butter, melted, and beat well for half a minute. Bake in buttered muffin pans for half an hour in a moderately hot oven.—(Copyright, 1891, by Cleveland Baking Powder Co.)

Use only Cleveland's baking powder, the proportions are made for that.



Cleveland's Baking Powder is the anti-dyspeptic leavening agent. The leaven comes from cream of tartar and soda, nothing else; no ammonia or alum.

EVERY one in need of information on the subject of advertising will do well to obtain a copy of 'Book for Advertisers," 368 pages, price one dollar. Mailed, postage paid, on receipt of price. Contains a careful compilation from the American Newspaper Directory of all the best papers and class journals; gives the circulation rating of every one, and a good deal of information about rates and other matters pertaining to the business of advertising. Address

ROWELL'S ADVERTISING BUREAU,
10 Spruce St., New York.

Fine Table Wines

From our Celebrated Orleans Vineyard.

Arpad Haraszthy & Co.

Producers of the

ECLIPSE CHAMPAGNE,

530 Washington St.
SAN FRANCISCO.

GENERAL AGENCIES:

NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOSEPH R. PEEBLES' SONS CO., 73 West Fourth Street.
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.

PURE PEPSIN

In Powder and Scale.

MANUFACTURED BY

ARMOUR & COMPANY, Chicago.

Guaranteed free from adulteration or make-weights; of excellent physical properties and high digestive power.

Under similar conditions, **ARMOUR'S PEPSIN** will exhibit greater activity than any other pepsin now before the profession.

The Manufacturers will be pleased to supply members of the Medical Profession with samples of their Pepsin, and with full details regarding digestive strength, if desired.

GRANT.

SHERMAN.

SHERIDAN.

McCLELLAN.

GEN. GRANT'S MEMOIRS.

Original $7 Edition for 30 Cents.

NO book, excepting the Bible, has ever had such a sale in the United States as General Grant's Memoirs. 650,000 copies have already gone into the homes of the rich, but the subscription price of $7.00 has placed it beyond the reach of people in moderate circumstances. **If 650,000 people have been willing to pay $7.00 for Grant's Memoirs, there must be a couple of million people in the United States who want them, and will jump at the opportunity** to buy them at the low figure here offered.

We will send you General Grant's Memoirs, publisher's original edition, best paper, cloth, green and gold binding, hitherto sold by subscription at $7.00,

FOR 30 CENTS!—FOR 30 CENTS!—ABSOLUTELY ONLY 30 CENTS!

and absolutely a proposition such as has never been made in the history of book publishing. The two splendid volumes of Grant's Memoirs, of which 650,000 copies have been already sold—not a cheap edition, but the best—for 30 cents; provided you send your subscription of $1.00 to the **AMERICAN ANALYST** one year, and also a subscription of $3.00 for the **COSMOPOLITAN MAGAZINE,** the brightest and cheapest of the great illustrated monthlies, itself equal to the best $4.00 magazine.

The **COSMOPOLITAN** is enabled to make this offer because of **the purchase of 600,000 volumes at a price which even publishers would deem impossible, and with the idea of running up its circulation to half a million copies.** By contract with the **COSMOPOLITAN,** and at no profit to us, we are enabled to offer our readers a share in the low price obtained through the largest purchase of books ever made in the history of the world.

If, however, you have Grant's books, our offer will permit you to take instead,

GEN. SHERMAN'S MEMOIRS, 2 Vols., sold by subscription for $5.00
GEN. SHERIDAN'S MEMOIRS, 2 Vols., sold by subscription for 6.00
GEN. McCLELLAN'S MEMOIRS, sold by subscription for . . 3.75

All of these are bound in cloth, green and gold, in uniform style with Grant's Memoirs.

Send us at once $3.00 for year's subscription to the **COSMOPOLITAN,** $1.00 for year's subscription to the **AMERICAN ANALYST,** and 30 cents for a set of Memoirs—$4.30 in all—to which add postage on the particular set of Memoirs selected.

WHY DO WE MAKE THESE GRAND OFFERS?

Simply because we want every intelligent family to keep well informed as to the popular science of this progressive era. We publish the **only popular journal on this subject—THE AMERICAN ANALYST.** Its subscription list is already very large; but we want at least **Fifty Thousand additional subscribers before January 1, 1892.** We know that, if we shall get them, we shall be able to hold most of them as permanent readers of our periodical. So at present sacrifice and at great cost, we have entered into a combination. The **COSMOPOLITAN** is the brightest and cheapest of the great illustrated monthly magazines; it gives annually 1,536 pages by the ablest writers, and over 1,200 illustrations by the ablest artists; and is just as interesting to the young boy or girl as to the oldest grey head. Now, then, we ask you to send us merely $4.30, and, on receipt of same, we will mail them to you regularly for **one year,** and will also send you (making no charge for the books) a set of **GENERAL GRANT'S MEMOIRS,** or either of the other works that you may select. **NO SUCH OFFER AS THIS WAS EVER MADE BEFORE BY ANY PUBLISHER SINCE TIME BEGAN!**

UNLESS OTHERWISE DIRECTED,

we shall invariably ship the books by express, charges to be paid by the receiver. If you wish the volumes forwarded by mail, you must distinctly say so at the time when you send us your address and the Money; and you must also enclose postage to prepay the packages at the following rates: **GRANT'S MEMOIRS,** 96 ozs., 48c.; **SHERMAN'S MEMOIRS,** 92 ozs., 46c.; **SHERIDAN'S MEMOIRS,** 84 ozs., 42c.; **McCLELLAN'S MEMOIRS,** 48 ozs., 24c. The government rate for postage on books is one-half cent per ounce. The **COSMOPOLITAN** and **AMERICAN ANALYST** are sent to subscribers free of postage.

SEND ALL ORDERS ADDRESSED

THE ANALYST PUBLISHING CO.,

19 Park Place, New York.

CONFEDERATE MONEY.

Warranted Genuine and in Good Condition.

We are extensive dealers in Confederate Money—rare relics of our late civil war; also Bullets, Cannon Balls, etc. We want agents in every city North to sell these mementoes, and we will pay agents handsomely to sell our goods. We will furnish the money to those desiring at the following retail prices: Shinplasters, 10, 25, 50 and 75 cents each, or the entire set 50 cents. Complete sets, consisting of $100, $50, $20, $10, $5, $2, $1, 50c., $1 per set. $500 bills, $2 50 each. $100 bills, 15 cents, or two for 25 cents. $50 bills, 10 cents, or two for 15 cents. $5 and $20, 5 cents each. 50c., $1 and $2, 25 cents each. Inquirers enclose stamp for reply.

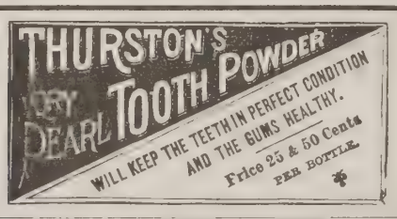
Publishers of SOUTHERN AGENT, Atlanta, Ga.

LITTLE BOYS AND GIRLS

MAKE EASILY $2 A DAY.

Write for particulars. Address

BARKER PUBLISHING COMPANY, Atlanta, Ga.





HAMMOND'S

CELEBRATED

Calumet Oleomargarine

Strictly pure, cheap and healthful.

Ask your grocer for it.

Put up in packages of all sizes, also prints and rolls.

C. H. HAMMOND CO.,

607 to 615 THE ROOKERY,

CHICAGO.

Also offices at Boston, South Omaha, Neb., and Hammond, Ind.

"BILLET"

are

Carefully Selected

French Sardines,

Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS.

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,

HOWARD STREET, BOSTON, MASS.

THE QUEEN'S PRIZE SCHOOL OF HISTORY.

About two years ago the publishers of THE CANADIAN QUEEN added what has proven to be a very popular and successful feature to their publication in establishing their Prize History School. It has offered competitive examinations in English, Canadian and American History, giving valuable rewards to those making the most correct answers. During this time there have been added the names of over forty thousand new subscribers to their books. Rewards have been made by THE QUEEN which have cost them in cash over ten thousand dollars. THE QUEEN'S Prize School of History has received the sanction and support of the clergy, press, and, in fact, of the best people of the Dominion of Canada. The following, taken from a leading daily newspaper, expresses an opinion which is universal:

A HANDSOME PRIZE.

AN EVIDENCE OF WHAT A GENUINE MAGAZINE COMPETITION OFFERS.

"On Friday there arrived from Toronto, for Miss M. Hora, a handsome Shetland pony, harness and cart, being the first award in the Royal Quilt Competition of THE CANADIAN QUEEN magazine. It attests the genuine nature of the magazine's contests by its excellent condition and value. THE QUEEN has frequent competitions and has made innumerable awards, displaying a generosity quite surprising to those who have had experience of the limited field for Canadian journalistic enterprise. But THE QUEEN has been a success as a business venture from the start, and is growing in literary excellence steadily. It covers the field of fashion, as well as light reading; talks to the household, the young, and, indeed, all home classes. The competitions have been used to assist the introduction of the magazine, for where it is introduced it is quite certain to remain a monthly guest. The leading prizes have been made, as instance this latest to Kingston, while many smaller prizes have rewarded the moderately successful among competitors. THE CANADIAN QUEEN is truly royal in its ways."—*The (Kingston, Ont.) Daily British Whig*, June 27th, 1891.

QUESTIONS IN AMERICAN HISTORY.

1.—Give the names of the early navigators who it is claimed by historians first discovered America.

2.—From whom has America taken its name?

3.—What class and nationality first settled Virginia? New York? Massachusetts? Pennsylvania? Maryland?

4.—What action did the Continental Congress of 1774 take and what was the result of that action?

5.—What was the first battle fought in the War of the Revolution?

6.—What nation rendered the Americans great assistance in the War of the Revolution?

7.—Give the names of the committee appointed to draft the famous Declaration of Independence.

8.—What was the date of the signing of the United States Constitution?

9.—After becoming a nation and before the great Civil War, what were the principal conflicts which engaged the Americans?

10.—What was the direct cause of the Civil War? What Generals of the Northern Army have occupied executive positions under the Federal Government since the closing of the War? Who was Commander-in-Chief and who were the principal Generals of the Confederate Army during the struggle?

11.—How long did this War last and what is the computed loss of life?

12.—What can be said to day of the United States as a nation?

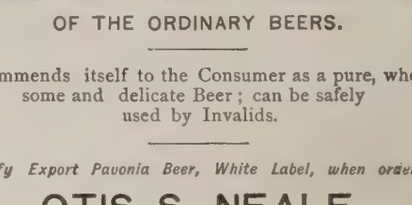
To the *First* gentleman sending the correct answers to the above questions in American History the publishers of THE QUEEN will present **"Majestic"** acknowledged the **Handsomest and Finest Riding Horse in Ontario.** ("Majestic" is sixteen hands high, thoroughbred, seven years old, and valued at $350.00.) To the *First* lady the publishers of THE QUEEN will present an elegant **Jacket of Genuine Alaska Seal** to be made according to the measurement supplied by the winner. To the *First* boy under sixteen years of age the publishers of THE QUEEN will present a **Little Giant Safety Bicycle** valued at $75.00. To the *First* girl under sixteen years of age the publishers of THE QUEEN will present an elegant **Music Box,** playing twenty tunes, finely finished and valued at $55.00.

To the gentleman from whom the *Last* correct answers are received before the close of this Competition, the publishers of THE QUEEN will present a **First Cabin Passage to Europe and Return** and **$200 in Gold** for expenses. This trip can be taken by the winner any time before October 1st, 1892. To the lady from whom the *Last* correct answers are received before the close of this Competition the publishers of THE QUEEN will present a **Pony, Cart and Harness.** To the boy under sixteen years of age from whom the *Last* correct answers are received before the close of this Competition the publishers of THE QUEEN will present a **Solid Gold Watch** containing one of the best American movements, and valued at $75.00. To the girl under sixteen years of age from whom the *Last* correct answers are received before the close of this Competition the publishers of THE QUEEN will present an elegant **Solid Gold Watch,** containing one of the best American movements, and valued at $65.00.

ADDITIONAL PRIZES IN ORDER OF MERIT: Silver Tea Services, Ladies' Gold Watches, Silk Dress Patterns, French Mantel Clocks, Portiere Curtains, Toilet Cases, Manicure Sets, and many other useful and valuable articles.

The object of the publishers in offering these liberal prizes is to introduce THE QUEEN Magazine into **new** homes. Answers must be mailed *on or before* November 10th, 1891, and must be accompanied by $1.00 for one year's subscription to THE CANADIAN QUEEN. Prizes awarded to subscribers residing in the United States will be shipped to them **free of duty.** The distribution of awards is in the hands of disinterested persons, and decisions will be based on the correctness of answers. Use your own language in wording the answers. No corrections can be made after your answers are mailed. THE QUEEN is a large, forty-eight page family magazine, especially interesting to ladies and children, and visits regularly **over one hundred thousand of the best homes** in Canada and the United States. The awards in THE QUEEN'S Prize School of History are made strictly with regard to merit, without partiality to persons or locality. The decisions must be accepted as final. If you have never seen a copy of THE QUEEN send six U. S. two cent stamps and receive a late number, post paid, containing letters from those who have received rewards in previous contests.

Address THE CANADIAN QUEEN, PRIZE SCHOOL OF HISTORY, 58 BAY STREET, TORONTO, CANADA.



A FORTUNE IN A FORTNIGHT!

Can't be expected, but thousands are making good livings from our FAMOUS TRADE SECRETS; Nearly 3000 GUARANTEED receipts of every business sent for $1.00. List and particulars free.

Box 441. EUREKA PUBLISHING CO., Chicago, Ill.



PRINT YOUR OWN CARDS

PRESS $1.00
Circular Size $8.00
Press for a small newspaper $44.

SAVE MONEY! Make money printing for others! Type setting easy; printed instructions. Send 2 stamps for Catalogue of **Presses, Type, Cards, Paper,** etc., to the Factory.

KELSEY & CO.,
Meriden, Connecticut.

LADY AGENTS WANTED.

I have a medical specialty for ladies use, which is one of the best selling articles in the country. You can make a good income handling it, and at the same time be doing your sex a great benefit. Write me at once for full information and exclusive territory. If you wish a sample sent enclose 12 cents postage. Dr. H. H. Jackson, 103 State Street, Chicago.

We can save you Fifty Dollars when you Build. See



A complete set of Plans to build from, simply state about price of dwelling desired. 25 cts. in stamps. Our book "Beautiful Homes." 25 cts. Our monthly book "The National Builder," 25 cts. Address

The National Builder, Adams Exp. Bldg., Chicago, Ill.

TABASCO PEPPER SAUCE,

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced by connoisseurs to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY'S SON,

NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

NATRONA BI-CARBONATE OF SODA.

ABSOLUTELY PURE.

The nature of the raw material from which NATRONA BI-CARBONATE OF SODA is made—viz., kryolith, a mineral containing *pure sodium*—insures a purity and uniformity of product which cannot be obtained from any other known material. In making BI-CARB. SODA from any other raw material, the use of sulphuric acid is a necessity, but none is used in any part of the process of making NATRONA BI-CARB.; hence its entire freedom from the slightest trace of arsenic, which is always present in ordinary soda. Its absolute purity and entire freedom from all traces of *sulphate of soda*, common salt and other impurities, render NATRONA BI-CARB. NEARLY TASTELESS, and being bolted through the finest bolting-cloth, insures the finest stage of division.

To these indisputable facts the attention of CONSUMERS of soda is specially called. They are IMPORTANT, and should influence both those who use and those who sell soda, to buy and sell NONE BUT THE BEST.

The NATRONA BI-CARB. Soda is kept in stock by almost every wholesale druggist and grocer throughout the United States, of whom it may be ordered.

Natrona Bi-Carb. Soda is unequaled by any other brand of English or American Manufacture.

PENNA. SALT MANUFACTURING CO.,

NATRONA CHEMICAL WORKS. PHILADELPHIA, PA.

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

ARROWHEAD HOT SPRINGS,

CALIFORNIA.

I MOST respectfully invite physicians of the East to write to me for information concerning this famous Southern California resort. The hot mineral water and mud, and the climate are unequalled in America. Diseases of the throat, lungs, liver, stomach and kidneys, nervous and skin troubles and rheumatism, are the ailments successfully treated. The hotel contains 125 rooms, is first-class, and lighted throughout with incandescent lights. Elevation 2,000 feet. Address,

H. C. ROYER, M. D.,
Arrowhead Springs, San Bernardino Co., California.



GOITRE, or THICK NECK.

I have a positive, speedy, cleanly, harmless and almost inexpensive cure. Come or write to me at 28 Arlington Court, CLEVELAND, Ohio. It is no iodine smear. Cure made permanent.

Dr. J. CASKEY.



RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,
184 Greenwich St., N. Y

AMERICAN ANALYST CLUB RATES.

WE have made arrangements by which we can furnish to our readers any of the periodicals named below at a club rate, with the AMERICAN ANALYST, at a considerable saving. Should any periodical not mentioned be desired, or several of the journals, drop us a postal card and we will give you a rate promptly. For sample copies address the publishers. Terms strictly cash, in advance.

	Publishers' Price.	Our Price, including AMERICAN ANALYST, One Year.
Arthur's Home Magazine	$1.50	$2.35
Babyhood	2.00	2.50
Century Magazine	4.00	4.50
Christian Herald, N. Y.	1.50	2.00
Christian Union, N. Y.	3.00	3.50
Cosmopolitan Magazine (See our Premium Offer.)	3.00	3.25
Cottage Hearth	1.50	2.00
Current Literature	3.00	3.50
Demorest's Magazine	2.00	2.50
Family Story Paper	3.00	3.25
Farm and Fireside	.50	1.40
Fireside Companion	3.00	3.50
Forum	5.00	5.25
Frank Leslie's Illustrated Newspaper	4.00	4.50
" " Popular Monthly	3.00	3.50
Garden and Forest	4.00	4.25
Godey's Ladies' Book	2.00	2.50
Golden Days	3.00	3.50
Good Housekeeping	2.40	3.00
Harper's Bazaar	4.00	4.50
" Young People	2.00	2.50
" Weekly	4.00	4.25
" Magazine	4.00	4.25
Home Magazine (Mrs. Logan's)	.50	1.25
Judge	5.00	5.00
Ladies' Home Journal	1.00	1.75
Ledger, New York	2.00	2.50
Life	5.00	5.50
Lippincott's Magazine	3.00	3.25
Magazine of American History	5.00	5.00
New York Weekly	3.00	3.50
Our Day, Boston	2.50	3.25
Outing	3.00	3.50
Peterson's Magazine	2.00	2.50
Popular Science Monthly	5.00	5.25
Puck	5.00	5.00
Review of Reviews	2.00	2.75
Scientific American	3.00	3.50
Scribner's Magazine	3.00	3.25
Youth's Companion	1.85	2.50

ADDRESS THE ANALYST PUBLISHING CO., 19 Park Place, New York.

GOLD MEDAL, PARIS, 1878.



W. BAKER & Co.'s Breakfast Cocoa

from which the excess of oil has been removed,

Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

IF you wish to advertise anything anywhere at any time write to GEO. P. ROWELL & CO., No. 10 Spruce St., New York.

SWIFT'S

CHOICE

Chicago Dressed Beef

AND

MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,

UNION STOCK YARDS,

CHICAGO, ILLS.

THE ORIGINAL AND GENUINE (WORCESTERSHIRE SAUCE).



LEA & PERRINS' SAUCE

In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—

Lea & Perrins

Beware of Imitations; see that you get Lea & Perrins'

For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS, NEW YORK.

GLENN'S SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,

C. N. CRITTENTON,

115 FULTON STREET,

NEW YORK.

WHAT A DIME WILL DO!

Every BOY and GIRL who loves to read splendid Stories, Sketches and beautiful Poems, should subscribe for the AMERICAN YOUNG FOLKS, a beautiful Illustrated Monthly Magazine, established in 1875. Its stories are the Very Best that can be obtained from the Foremost Writers of Juvenile Literature, and every issue is filled with good things. The regular subscription price is $1.00 a year, but if you will **Cut this out** and return it to us with **a Silver Dime** and your name and address, we will send you the Magazine Six Months on Trial. Address,

AMERICAN YOUNG FOLKS, Manchester, N. H.

The Standard of Excellence.

KINGSFORD'S

OSWEGO

Pure and Silver Gloss



STARCH

KINGSFORD'S

OSWEGO CORN STARCH

FOR

Puddings, Custards, Blanc-Mange, Etc.

THE PERFECTION OF QUALITY.

WILL PLEASE YOU EVERY TIME.

Always ask your Grocer for these goods.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 43. NEW YORK, THURSDAY, OCTOBER 22, 1891. WHOLE No. 243

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - $1.00 per year
Single Copies, - - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.
Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.
Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,
H. LASSING, M. D., } Editors.
T. P. McELRATH, }
No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

Bright Stories.
How It Got Into Print—*Concluded*..... 508
Chicago Exposition Buildings..... 510
Cosmetics..... 509
Dining in Norway..... 508
Domestic Dietetics..... 509
Editorials..... 505
Kitchen Education; Women at the World's Fair; Women's Christian Associations; Proposed Metric System.
Interplanetary Communication..... 507
Oleomargarine in Russia..... 507
Quick Cookery..... 509
Rain—To Order..... 506

KITCHEN EDUCATION.

One of the greatest difficulties of modern civilization is to be found in the family kitchen, and the fact that disaster seldom occurs there is proof of the wonderful self-adjustment of that civilization. The old hunter's saying that "Water cleans itself in running over seven stones," might well be paraphrased by some epigrammatist to declare that the complex conditions of modern life, at least in our community, counteract and correct one another with the same beautiful accuracy that marks the play of natural laws. The kitchen is the laboratory of the home. In it are constantly in operation chemical changes and combinations of the most important description. Upon the accuracy of these operations depends the health, the life of the entire family. Upon the quality of the ingredients, and the skill and care with which they are combined, hangs the whole question of adequate nourishment. Philosophers tell us, indeed, that even more than our physical welfare is conserved or destroyed according to the management of the kitchen. One man says that no husband ever ill-treated a wife who was a good cook. All agree that domestic peace, and even the coherence of the family, are easily destroyed by evil cookery. The difficulty comes in just at this point. It seems to be a necessity, or almost a necessity, of our life that the most of the cooking, at all events, for each family should be done in its own kitchen. Co-operative housekeeping is not yet well advanced even in its experimental stage. This one most important department of the home must therefore be under the personal superintendence of some one of the family, and here again the conditions of civilization render it almost inevitable that the wife should be that one, unless, indeed, there be a grown daughter, or unless, as is too frequently the case, the responsibility rests upon a servant. Now, it is not a disparagement of the female sex to say that not one woman in a hundred has any knowledge whatever of some of the simplest elementary laws that really govern her cooking. Some empirical knowledge of results, indeed, she must have, in order to cook at all, but as for the real fundamental knowledge which underlies all cookery she has none of it. In fact, not two per cent. of cooks, so-called, realize that any such knowledge is necessary or even desirable. A parrot-like acquaintance with recipes and a little mechanical skill in manipulation are, from their point of view, all that is required. Mankind long ago learned to insist upon some fundamental knowledge on the part of the operatives who run its machinery and steam boilers, but it has not yet reached the point of requiring diplomas of its cooks. Consequently, the delicate machinery of the human body is deranged, and explosions occur far too often. Yet we are a well-nourished and reasonably well-fed people—a thing which does not seem possible under the conditions stated. That they are not over-stated is certainly known by all who have given intelligent consideration to the subject. There is a manifest paradox here which can only be understood by taking into account the balancing laws of civilization referred to. The very highest skill—the most superb probity known to mankind—stand behind the ignorance of the cook. There was never a time in the history of the world when the supplies of the kitchen were as wholesome and as honest as they are to-day. It is the fact that the housekeeper, unless she is devoid of ordinary prudence and common sense, can hardly buy dangerous food that protects the community. To this end the AMERICAN ANALYST has contributed not a little, but it is proper to say that natural laws and the general honesty of mankind have done far more. Not seldom an article may be found in some sensational newspaper describing the awful evils of adulteration, and declaring that pure foods of various kinds are almost impossible to get. Happily, such stories are false. That there are harmful adulterations known and used is true. It is an important part of the work of the AMERICAN ANALYST to discover and expose instances of the kind, but it is also true that they form a very small percentage of the food supply. Yet is it not worth while to consider always the importance of better education in the kitchen?

WOMEN AT THE WORLD'S FAIR.

A meeting of the Press League, a National World's Fair organization of active women writers, was held in Chicago, October 13. Mrs Potter Palmer addressed the meeting, and among other things said: "The Board of Lady Managers desires that the women of all countries may participate in the privileges given it. The Board has decided that at the coming Exposition it will not attempt to separate the exhibit of women's work from that of men, for the reason that a separate exhibit for women would necessitate the duplication of all the buildings which were planned for the Exposition. Women will, however, have another opportunity of showing work of superior excellence in the Women's Building. The committees of women organized in all countries as auxiliaries will be asked to recommend objects of supreme excellence that women have created. There will be a library stocked with books written by women. It is desired that this should be complete and that it contain all the work of women upon the exact sciences, philosophy and art, as well as the best of their poetry and fiction."

WOMEN'S CHRISTIAN ASSOCIATIONS.

The eleventh biennial conference of Women's Christian Associations of the United States and Canada began in Chicago, October 13, to continue four days. Mrs. Leander Stone, of Chicago, delivered the address, of welcome which was responded to by Mrs. Springer, of St. Louis. Mrs. C. N. Judson, of Brooklyn. N, Y., presided. New officers were chosen as follows: Miss M. E. Rawson, of Cleveland, second vice-president; Mrs. William Simpkin, of Richmond, Va., secretary; Mrs. A. S. Chamberlain, of Chicago and Mrs. Edward Ely, of Chicago. A paper on "The One Thing Needed," was read by Mrs. Angus Campbell, of Memphis. Among others who participated were Miss Grace K. Dodge, of New York; Miss C. V. Drinkwater, of Boston; Miss Coman, Wellesley College; Miss Kate McLane, Baltimore; and Mrs. William O. Gould, San Francisco.

PROPOSED METRIC SYSTEM.

In our issue of July 23, we described in our editorial columns a modification in the present system of weights and measures proposed by a Danish engineer named Hanssen, whereby it could be readily converted into a true decimal system equally convenient with the French metric method. We observe that the proposition is receiving extensive attention in directions likely to influence public sentiment. The Boston *Popular Science News* and the *Scientific American* of this city have devoted some space to a consideration of its

READ PAGE 513

merits, and the latter journal quotes the *Travelers' Record* as saying: "We have never been enthusiasts over the French metric system, says the *Travelers' Record*. Its original unit is as purely arbitrary as the foot itself; and all its secondary units are so violently out of gear with everything existent that the enormous labor and loss of the change can hardly be made good by any service. It is possible to pay too high a price even for a decimal system with interchangeable parts. A system is proposed (and detailed in the *Chemical News*) by a Danish engineer named Hanssen, which is so wonderfully simple and easy that we hope to see it speedily adopted through all the world except those committed by pride or interest in the French scheme; it has almost all the merits of the other system and almost none of its immense drawbacks. Nobody seems before to have noticed the very close approach to interchangeability between our principal units of weights and measures. Mr. Hanssen proposes to increase the inch and foot to 1.000403 times their present length, or about $\frac{1}{2500}$, less than $\frac{1}{200}$ of an inch to the foot, which for ordinary purposes is no change at all; and the ounce, pound and imperial gallon will need no change. A cubic foot contains 436,971.78 grains of distilled water; the new cubic foot would contain 437,500 grains, or just 1,000 ounces avoirdupois. Sixteen cubic feet would equal exactly imperial 100 gallons, or one hectogallon, which will weigh just 1,000 pounds. The foot will be divided, like the metre, into decifoot, centifoot, millifoot; there will be hektogallon, dekagallon, gallon, decigallon, centigallon, milligallon; and so on with others. Of course, governments must first agree on the basis; but it could quickly be made what the French metric system never will become—a really popular utility, displacing the old standards.

RAIN—TO ORDER.

THE RECENT RAIN-MAKING EXPERIMENTS AND THEIR POSSIBLE OUTCOME.

In a handsomely illustrated article on "Rainfall Experiments," Mr. N. A. Jennings describes, in *Harpers Weekly* of last week, the recent government tests of the theory first propounded about twelve years ago by Mr. Edward Powers of Delavan, Wis. The writer says: "While the production of rain by properly directed scientific methods is a comparatively new idea to the general public, it has been discussed and written about and theorized upon very thoroughly by a few enthusiasts for many years. Only recently, however, have their theories received any substantial recognition or encouragement, and, in view of the limited number of the experiments made within the past few months by the special commission of the Department of Agriculture, it would be premature to attempt to draw final conclusions regarding their practicability or worthlessness. It will require a large number of thorough tests of the rain-making power of man upon the concussion theory to fully establish its practical value. However, the subject is one of extreme interest to the public at large and particularly to that great class of workers to whom the question as to whether man can by scientific means bring moisture from the sky at will, may mean far greater prosperity than they may ever hope to attain by having to rely, as they do now, upon nature's caprices. Curiously enough, no sooner had the government commission started for the arid regions of Texas to test one rain-making theory, than a rival in the manufacture of showers appeared before the public with the claim that he could produce rain whenever he chose to do so. But Frank Melburne has not yet deemed it advisable to acquaint the public with his method of rain making, and consequently any criticism of his work must be without true value. It would seem from the reports of his experiments, which have been published from time to time in the daily newspapers, that in a number of instances he certainly did produce rain when the Signal Service officers predicted fair weather. Upon several other occasions he failed to do so, and consequently it must remain an open question whether his method is practical or not, until he shall have made extended experiments, and shall have permitted men of scientific attainments to have some insight into his mode of operating. The tests made by Special Commissioner General Robert St. George Dyrenforth for the Department of Agriculture have, on the other hand, had no veil of secrecy drawn about them, but have been made publicly, and any investigation by scientists and by the public at large has been welcomed. The theory upon which General Dyrenforth and his corps of able assistants have been working in Texas is one which for twenty-five years or more has been persistently advocated and expounded by Mr. Edward Powers, C. E., of Delevan, Wisconsin, and if, after a thorough trial, it shall be found practical, Mr. Powers will have the honor of being the man who by his unremitting efforts forced it upon the world. The aspiration of mankind in this age of progress are limitless, and the attempt to control the elements, which a score of years ago would have been looked upon as an impertinent effort to usurp the powers of Providence, is now viewed by the public at large as only another step in the onward march of science. The average citizen merely shrugs his shoulders as he looks up from his daily paper and says, 'I see here that they are trying to make it rain by artificial means; what will they do next?'" The theory of producing rain by concussion, as set forth by Mr. Powers in his book *War and the Weather*, may be briefly outlined as follows: Rain in its natural state is nearly always produced by the rapid union of two or more volumes of moisture-laden air which differ in a more or less great degree in temperature, the several portions, when mingled, being incapable of retaining the same amount of humidity that each held in suspension before they united. If the amount of moisture held by the two or more volumes is great, then the excess is great in proportion when they mingle, and it falls as rain; if it is of slight amount, it forms cloud. It has been discovered by scientific investigation that there are constantly flowing in opposite directions over the entire area of the United States and the lower portion of British America two vast currents of moisture-laden air. One of these flows from the west to the east, and is known as the Equatorial Current. It is a continuation of the south-west trade-wind of the Pacific Ocean, and bears with it a great quantity of moisture—which it has received by evaporation in travelling over two thousand miles of tropical seas. The Equatorial Current is, therefore, quite warm and very humid. Above the Equatorial Current, and flowing in an almost opposite direction, from east to west, is what is known as the Polar Current. This great air stream, having circled around the north pole and crossed the arctic seas, is comparatively cold, and cannot for that reason contain a great amount of humidity. However, it probably does hold almost continually as much moisture as it is capable of sustaining. When for any reason, portions of the Equatorial Current are forced up into the Polar Current, and the warm and cold bodies of the humid air mix, rain results; or, in other words, when the equilibrium of the perfectly poised strata of air is disturbed, a storm of more or less violence, according to the area of the disturbance, is caused. Now it is well known that any violent explosion sets the atmospheric waves in rapid motion, and they beat upon any opposing obstacle with a force which may be likened to the breaking of the waves of the sea on a rock-bound coast. A familiar example of the force of these air waves by concussion is that of the breaking of windows by an explosion a long distance away. From a logical study of these natural phenomena and meteorological conditions of the upper air strata, Mr. Powers concluded that it was within the power of man to so set the lower portion of the air in violent motion as to cause its waves to beat upward against the ever-present and slow-moving Equatorial Current, disturb its equilibrium, cause it to mingle with the Polar Current above, and so by their mixing produce rain. In support of this theory, Mr. Powers was at great pains to collect data regarding the undisputable fact that a great majority of the world's battles, where there was heavy artillery firing have been succeded by copious rains, and he presented a formidable array of statistics to show that his ideas upon the artificial production of rain were correct. Like most men with new and great plans for the benefit of mankind, Mr. Powers met with but little encouragement, and he encountered ridicule or even disheartening cold politeness wherever he attempted to promulgate his theories. By dint of perseverance, and buoyed up by the belief that the practical working of his theory would confer upon mankind for all time a measureless boon, he at last succeeded in gaining some powerful proselytes to his cause. Among these was ex-Senator Farwell, of Chicago. Senator Farwell was so deeply interested in the subject that he caused the appropriation under which the recent experiments have been made to be included in the general appropriation for the Department of Agriculture at the last session of Congress. As only $9000 was appropriated for the rain-making experiments, and as Mr. Powers had estimated that at least $80,000 would be required for one test, it was thought advisable to put the practical working of the matter into the hands of another man. General Dyrenforth, who is a graduate of the University of Heidelberg and of the Polytechnic at Carlsruhe, and who was a believer in the theory of producing rain by concussions, was selected to conduct the experiments. A full account of how each experiment was made would occupy too much space for the limits of this article. I have been present at all the tests, and have observed them carefully, and the deduction which I have drawn is that while, with the present limited knowledge of the subject, it would be extravagant to attempt to transform the desert places of this country into fertile farming lands, still the benefits which will be realized if rain can be produced at will, even in more favored localities, will be so vast that it is well worth while to continue in the lines laid down. That by far the greater number of the tests were successful I know from personal observation. Those which were made at Midland, on the southern edge of the Llano Estacado, were particularly encouraging. All of that country is dry and almost barren, and almost no rain had fallen there for months previous to the advent of the rainmakers. Immediately following several of the experiments heavy rains fell within a radius of from forty to one hundred miles of the place where the explosions were made, and, what was even more important, the rain fell heaviest immediately at the place where the experimenters were. At El Paso the efforts to produce rain were not nearly so successful. According to the officers of the Signal Service at El Paso, that town and its immediate vicinity are peculiarly exempt from the meteorological and barometrical conditions which prevail in nearly all other portions of the United States. Quite often heavy rains will fall on all sides of the valley in which El Paso nestles, and day after day storms will be reported from all points of the compass, yet not one drop will fall on the city. On the day before the explosions were made at this place, Mr. John T. Ellis, who, in General Dyrenforth's absence, had charge of the experiments, made a balloon ascension for the especial purpose of discovering if possible whether he could find the height of the equatorial and polar currents. He entered the equatorial current at a height above El Paso of about 7,500 feet, but was surprised to find that even in that aerial river the humidity showed but a slight percentage. The next day the barometer was exceedingly high, and the humidity was only fourteen per cent. in the city. The indications for rain of any kind, natural or artificial, were very slight; it was what was known as a "clearing day," and the forecasts of the Signal Service officer

were for continued fair weather. Not only was this the case in El Paso, but the same conditions were reported as existing within a radius of one hundred miles from El Paso. The means for producing the concussions desired were on a grand scale. An immense quantity of dynamite and rackarock powder was carried to the summit of Mount Franklin by plucky little burros ; many large ballons, made to contain from six hundred to twelve hundred cubic feet of oxyhydrogen gas —one of the most powerful explosives known in chemistry—were mady ready ; over a hundred 21-pound bomb-shells were ranged beside mortars, ready to be thrown high in the air and there exploded. The rather elaborate programme was carried out without hitch or accident of any kind, and the people of El Paso and the many distinguished visitors who had come from Mexico and near-by States were treated to an exhibition which has been without parallel in the United States since the war. The number of explosions made on that day was greater than that of the shots fired from cannon in many important battles. The concussions were so great from the explosions of the balloons that the buildings shook perceptibly, and when charges of from thirty to fifty pounds of dynamite were set off at a time plaster fell from ceilings, and women and children rushed out of doors in terror. This bombardment of the cruelly unsympathetic and unresponsive sky was kept up for twelve hours by the efforts of the rainfall men and a detachment of soldiers from Fort Bliss. Not a drop of rain fell in El Paso within ninety-six hours after the last explosion, but reports from the surrounding country, and particularly from the Mexican State of Chihuahua, stated that heavy rains had fallen all the way from fifteen to one hundred miles from this city. In Chihuahua these rains were sorely needed, as there had been a severe drought in that State for many months. The result of the firing in El Paso itself was the rapid falling of the barometer, a marked increase in the percentage of humidity, and, what was never known to occur there before in the history of the town, the precipitation of a heavy dew there that night. In view of this remarkable barometric change produced by the experiments in El Paso, and in view of the copious rains which followed all the tests near Midland, it is certainly safe to say that the concussion theory of rain-making has now arrived at a stage when the question is not, can man produce rain? but rather, under what conditions and in what manner must he proceed to do so? I believe that the correct answer to this latter question will be given before the end of the century.

INTERPLANETARY COMMUNICATION.

WILL MAN EVER VISIT MARS OR THE MOON?

The distinguished French astronomer, Amédée Guillemin, gives his views on the subject indicated by the title of this article in a paper published in *La Nature*. After conceding that striking astronomical discoveries, of a kind to arouse deep interest in the general public, have been rare for some years past, he asks, "Are we to conclude, therefore, that there is no work going on in the observatories, and that there is no progress in science? No one who keeps posted in regard to the daily labors of the astronomers of the two worlds, who reads, or at least glances through, the periodicals containing accounts of these labors, will so conclude. Such a conclusion would be refuted by that new enterprise which bids fair to be fertile in results, the construction of a map of the sky effected by photography, and which will give the exact position of the stars up to the fourteenth magnitude. This map, of course, is not sufficient to create a sensation like the unexpected arrival of a comet, which would draw skyward the eyes of all loungers along the streets; but the importance of astronomical observations must not be measured by the noise they make. Undoubtedly it would cause a genuine sensation if the legacy of 100,000 francs left by the good lady of Pau (see *Literary Digest*, vol. iii., p 486) should result in establishing communication between the earth and some other heavenly body. For my part, however, I do not see what astronomy, or even our poor humanity, would gain thereby. It is said that the Academy of Sciences is disposed to accept the legacy, thanks to a clause in it like that which has converted the Bréant prize into an annual recompense, decreed to the authors of discoveries which have advanced the question of the cure of cholera. In like manner, the annual income of the sum bequeathed by Madame Guzman, the lady of Pau, can be used to promote researches relating to the constitution of the heavenly bodies. To any one who has precise information in regard to the actual knowledge of astronomers as to the physical aspect of the stars of our system, it is evident that there are two only on which can be based the hopes of those who believe in the possibility of interplanetary communications—the Moon and Mars. First of all, as to the Moon. Its distance from the earth (less than 400,000 kilometers), the clearness of its disk, the ease with which can be distinguished with the telescope features of small dimensions, the absence of all nebulosity of a nature to conceal spots, would render our satellite eminently suitable for sending signals to the earth. We must believe that the inhabitants of the moon have not yet dreamed of sending signals to the earth, since the numerous observers of her disk, the laborious makers of lunar maps, the Beers and Mædlers, and, above all, the Schmidts, have not perceived any signals. There is another question, however: Are there, can there be, inhabitants in the moon, where there is neither air nor water? If there is a point universally admitted, it is that there are no inhabitants of the moon. Under these conditions it would appear superfluous for us, on the earth, to make efforts to communicate with the inhabitants of the moon; and it is a pity ; for the other heavenly body to put questions to, the planet Mars, is, alas! infinitely less favorably situated for the establishment of an interastral telegraph. When in opposition to the earth, Mars is still about 14,000,000 leagues—that is, 55,000,000 kilometers—from us, or one hundred and sixty times more distant than the moon ; at that time the diameter of its disk stretches to 25 seconds. According to Schiaparelli, the smallest objects visible on the surface, under the most favorable circumstances, when there is a luminous spot on a dark background, or a dark spot on a luminous background, have a diameter equal to one-fiftieth of that of the planet—that is to say, of about 137 kilometers. This lowest limit can be reduced, it is true, by using object glasses of very great size, which will magnify more. Even then, however, it is certain that luminous signals on Mars, for example, to be seen from the earth, must have enormous dimensions. The inhabitants of Mars, more advanced than ourselves in astronomical science, as one of our cleverest astronomers supposes, if they think of bringing about an exchange of telegraphic communications with their terrestrial neighbors, will have to use signals with diameters which must be measured by kilometers in every sense. Do the Martian people dream of such a thing? If they do, there is something which, I apprehend, will bother them a little. The earth, when in opposition to Mars, is for observers there in conjunction ; our planet is then lost in the rays of the sun and invisible to Mars, except the earth at that time happens to be passing across the radiant disk of our luminary. Then the earth is a little black and round spot, upon which, alas! the Martian astronomers, do their best, can distinguish nothing. At the quadratures of the two planets, the earth would be better posted for observations from Mars, but the two bodies will be at a much greater distance from each other. I stop here, not wishing to discourage altogether the candidates for the prize of 100,000 francs, so generously and so imprudently offered. Perhaps, however, I may be permitted to state my conclusion, which is, that the problem of interplanetary communication is not yet very near solution. That conclusion, I imagine, will not be contradicted by serious astronomers. I have faith in the indefinite progress of science, while convinced that such progress has limits; but I also think that science is not profited by allowing the imagination to pursue chimeras, and I am inclined to believe that interplanetary communication is a chimera."

OLEOMARGARINE IN RUSSIA.

STRINGENT LAWS TO PREVENT DECEPTION.

A law enacted May 11, 1891, regarding the manufacture and sale of oleomargarine and artificial butter in the empire is summarized in the *Milch Zeitung*, No. 49, 1891, as follows :

1. The law understands by the term "margarine" the material prepared from fresh fat beef, after the separation of the stearine, according to the method of Mege Mouries ; and by "artificial butter" the material prepared from 100 parts by weight of margarine and 100 parts by weight of milk or ten parts of cream.

2 The manufacture of margarine and artificial butter is restricted to establishments fitted up exclusively for this purpose.

3. Such establishments, as well as slaughter-houses furnishing them with crude materials, will be under the supervision of special officials, to be appointed by the Minister of Finance. The expense of this supervision is to be contributed by the manufacturers.

4. It is forbidden (*a*) to color margarine or artificial butter the color of cows' butter ; (*b*) to mix margarine or other fats with cows' butter for the purpose of selling, to bring such mixtures into the market, or to store in places where cows' butter is kept or sold.

5. All vessels in which it is exposed for sale must be plainly marked "Margarine" or "Artificial Butter." Tubs or boxes containing these materials also bear the name of the manufacturer.

6. All stores or establishments dealing in oleomargarine or artificial butter must display in a prominent place a placard to this effect.

7. The selling of these materials in stores which are especially for the sale of dairy products is not allowable.

8. The importation of these materials from other countries is forbidden.

9. The Minister of Finance and the Minister of the Interior are charged with the execution of the law, and the seeing to it that the manufacture is carried on under proper sanitary conditions.

The penalty for offering adulterated cows' butter for sale, or the storing of such adulterated butter where cows' butter is made or sold, is forfeiture of the material and imprisonment not exceeding one month, or a fine not exceeding 100 rubles ($77.) The penalty for disregard of the other clauses of the law as to manufacture and sale, is forfeiture of the material and a fine not exceeding 100 rubles.

ELECTRIC MOTORS.—George Westinghouse is said to have invented an electric street-car motor which will pull 28,000 pounds. With Edison already confident of success in the same direction, the surface transit problem ought to be solved in the immediate future.

FEAR AND FATE.—Few people die of the peril they most fear, says a student of casualties. Ropewalker Dixon, who crossed 350 feet above the whirlpool rapids at Niagara on a three-quarter-inch cable last July, has just drowned while bathing. So the man who fears the gout may go untwinged all his days only to slip on a banana peel.

YOUNG ADVENTURER.—Capt. F. E. Younghusband, whose name has been frequently in the cable news of late in connection with the mysterious land of Pamir, "the roof of the world," is only twenty-four. Three years ago he travelled from Pekin to India, 7 000 miles Through hostile territory, receiving a medal from the Royal Geographical Society as the most distinguished of recent explorers.

BRIGHT STORIES.

HOW IT GOT INTO PRINT.

A Story of a Canadian Village.

Walter Blackburn Hart in the *Boston Transcript*.

(*Concluded from page* 408.)

The event with all its details and many additional facts, which, however, were regarded as dubious and superfluous by the newspapers, was discussed and related in the corner grocery store—the parliament of every Canadian village—for years and years after the great world had forgotten all about it. The great world recognized the existence of St. Barthelemi for one week—a sad week for St. Barthelemi. The event belongs to the history of St. Barthelemi, and it will be immemorial there. The reason is that it was a sad one, and country folk have long memories for such things. The people of the cities are more inured to sadness; it is but the daily dish of the newspapers with them; it is writ large across the faces of the bustling crowds in the streets. And to the visitants from the mysterious realms of newspaperdom who gave St. Barthelemi a sudden brief importance, it is all merely *news!* These, too, have their sorrows, but they have hardly time to think about them.

And this is a true account of the real event.

It was a bleak December night, and the snow was falling heavily, enwrapping the scattered houses of the village in a sombre gray mantle, and making the parlor of the Revere doubly inviting by contrast.

About nine o'clock the door of the bar-room was pushed open in an uncertain kind of way, and every one looked round in surprise as a stranger, a short dark man, staggered up to the counter. "Topsy" was seated upon it chatting gayly with old Runians, who was repeating his quaint sayings to a little knot of men laughing and smoking at his elbow. The group gave way to the stranger, who suddenly pulled himself up straight and looked fixedly at the child.

Old Runians, with his big brown hands on his hips, looked at the stranger with disapproval in his keen gray eyes. The man was drunk, and Peter always used to say that although he kept an inn he was an advocate of temperance. He made it a rule never to serve any liquor to a man already under its influence. The people of St. Barthelemi knew this, and they knew also that no blasphemy was allowed in the Revere House, more especially when "Topsy" was within hearing. The host declared that he was incorruptible, but he would retire if little pitchers could not be as much respected under his roof as under the parson's. "Topsy" was accordingly lifted down and told to go to his mother in the kitchen.

"I don't want you here, stranger," said old Peter, quietly, leaning aross the counter. "Yes, oblige me by taking yourself off."

"I am not such a stranger as you think, Mr. Runians," replied the dark man with an ugly grin and a burst of profanity. "You can just keep that sort of twaddle to yourself. I want a drink—and I want to talk business."

The big old sea captain laughed, but his brows contracted and the crowd left off talking among themselves. Old Runians was not accustomed to have any man in St. Barthelemi dispute his authocracy in his own house, and his great physical strength had made him thoroughly respected and feared. The implied contempt of the stranger amused him.

"See here, mister, I don't know you, and I don't want to. Now get out of my house without any more argumentation." This was one of Runian's pet big words.

"But I know you, and I'm going to talk with you. See!—that boy you sent away is *my* boy. I'm Joseph Joselin. Now do you know me?"

Old Runions turned white and said nothing.

Now you know me, eh? I'm Jose Joselin? And I'm goin, to take the boy away with me before I leave this place." And Mr. Joselin laughed until he almost lost his grip on the counter and his equilibrium at the same moment.

The little crowd gathered round the man with curiosity. One or two of the inhabitants exchanged glances as they looked keenly into the evil bloated face of the stranger. Runians looked at them inquiringly.

"It's Joe Joselin, sure enough," said one.

"Of course it is—of course it is. And I'm as dry as a lime kiln."

"Joe always was," said a man in the rear, laconically.

A great struggle was going on in Peter Runians's breast. He was one of those untutored, powerful men who, when aroused, have to torture themselves to restrain their passion.

"I would advise you to go back to where you've come from, he said, speaking very slowly. "St. Barthelemi can do without men of your sort. And if you're Joseph Joselin, I'm no fool. You've got to prove it by law. A man can't die for twelve year and then come to life agin, without a little legal formality."

"I can prove who I am soon enough. So look here you sea cook, be civil! I know you, and you can't skeer Joe Joselin. Who are you to refuse a gen'lman the drink he wants to pay for?" and he dashed some money on the counter. "'Sides, I want my friends here," turning to the men around him, "to drink to Joe Joselin's health and Joe Joselin's brat. He's old enough to be useful now—and I'm going to have him."

"Come, come, my man, don't be saucy. Be off, now"—in a voice of thunder, as his heavy fist descended, making all the glasses and decanters rattle. "Be off; and I'll see when you are sober. D' ye think I'm goin' to send my boy off with you on such a night as this?"

"Have you the cursed imp—impudence to say—"

"I give you just one minute," said Runians, interrupting and glancing round at the old-fashioned clock, "to get out of the house. D' ye hear me? If you're not gone then—" Old Runians shrugged his shoulders and the crowd laughed.

"I'm goin' to stand drinks—and I'm goin' to have that brat," said Joselin, with the persistency of intoxication.

Runians looked impatiently at the minute hand of the clock. "You're not; so make up yer mind to that."

"I won't, eh?" Mr. Joselin turned away and reeled toward the passage leading toward the kitchen.

In a moment Peter Runians was no longer an innkeeper—he was the old sea captain, in a perfect tempest of passion. He sprang after the man, and, catching him by the collar, swung him round as if he were a wet spaniel. "Damn you!" he cried, purple with anger. But as he reeled the cobbler caught up a glass bottle from the counter, and in an instant he had dashed it into Runian's face. In its descent the vessel struck the oil lamp hanging above their heads, and it fell with a loud crash, leaving them in darkness. There was a sharp cry of pain from Runians, followed by a half-stifled yell from the cobbler—a general scuffle, and a confused noise of curses and blows. In the midst of the disturbance Mrs. Runians came to the door with "Topsy," clinging to her skirts in terror.

"Kate, bring a light—a light! Quick!" she cried.

As the light glimmered in the hallway, old Runians's voice was heard above the din, and for a moment a writhing form was dimly seen above the heads of the crowd. Then it descended, and all was indistinct again—a swaying mass of struggling men.

All at once "Topsy" darted from Mrs. Runians's side into the frenzied group. In the uncertain light streaming from the hallway his quick eyes had caught the gleam of a knife. He flew at his father's throat, forcing his way into the middle of the throng no one knew how. The cobbler shook him off—there was a flash of steel through the air—a shrill cry—a sudden rush out into the snow, and the crowd parted leaving Joselyn gasping for breath pinioned in the strong arms of old Peter.

A trembling maid ran in with a lamp. Mrs. Runians snatched it from her and held it aloft. Then she reeled to the counter like one stabbed to the heart, powerless to cry out, her eyes distorted and vacant looking.

On the floor in a pool of blood, stabbed and trampled under foot, lay "Topsy." The knife intended for her husband had been sheathed in the boy's bosom. In a few moments Mrs. Runians recovered herself and was on her knees, with the poor pallid little face against her own, down which the tears were now streaming. Very gently was the frail little body carried into the kitchen and laid on the great deal table, and hushed and broken were the voices as the men gathered in the doorway. At last the doctor arrived, and, as the women were bathing the wound, "Topsy" opened his eyes and whispered—

"Is father—father?—"

He could not finish, and a spasm of pain shook the poor little frame as he sank back.

"God bless him! God bless him!" said Mrs. Runians through her sobs. She knew which father he meant. "Old Peter brought home an angel that winter's night and God has taken him again!"

DINING IN NORWAY.

DESCRIPTION OF A CHARACTERISTIC NORWEGIAN ENTERTAINMENT.

A neat maid, with a beautiful complexion, announced dinner, and Professor Heiberg offered me his seat at table, said, "Velkommen til bordet" (welcome to the board), a pretty way of expressing hospitality. The table was charmingly arranged with quaint old Norwegian silver and beautifully fine embroidered linen, says a writer in *Murray's Magazine*. The silver drinking-cups, of various shapes had usually little round tinkling things hanging from them as an ornamentation. These dangles give a light and pretty effect, and are quite old Norwegian style. Some of the spoons, with their quaintly twisted handles, were also very pretty. The menu was excellent, and in our honor had been composed of purely representative foods. First of all we had a delicious white soup made from cod, in which floated small balls of the fish, along with French beans that had previously been prepared by being soaked in vinegar and sugar. This soup sounds a curious melange, but it was really excellent. Next came a prepared fish served in a souffle dish, something like kegeree, only without any rice. A white sauce was handed with this, and the capers served separately. Wonderful to relate, we had fish knives—still a great luxury abroad. Cold ham, tongue and peas, prettily arranged together on one dish, were next handed round, and then came hot ptarmigan, which in its native land, well larded, and with a thick Norwegian sauce, is an excellent dish. With this we had compote of raspberries, red currant jelly, and preserved ginger. Multer are delicious. They are yellow fruit about the size of mulberries. They grow on low bushes in the Norwegian mountains—the fruit and flower bearing simultaneously. They are picked in October and preserved and served cold with cream. They have a slight flavor of pine trees, if such a thing is possible, but they are fascinating food. Two or three kinds of bread were eaten—the white rolls, black bread, which closely resembles German "pumpernickel," and "flat brod," a bread or cake made from rye, and first cousin to Scotch oat cake. Hock and claret were drunk during dinne

and sweet champagne served with the pudding and dessert. After dessert we had cheese, and the meal ended. "Skol" is really a Swedish word for drinking your health, and almost every time any one drank anything they smilingly skoled across the table to some one, who thereupon had to bow and drink, and bow again before putting down the glass. We, as guests, were skoled by every one in turn, until at last this health drinking became quite alarming, and we merely bowed in self-defence. With many thanks from our host for kindly dining with him, and many invitations for the future (a universally pretty form of politeness), our host offered me his arm and we walked back to the drawing-room. After a few minutes' conversation the gentlemen left us to smoke. Excellent coffee, with scalded cream, was then handed, accompanied by Swedish punch, a delicious although somewhat sweet liqueur. Our hostess produced a large, handsome cut-glass bottle of eau de cologne, to which her friends liberally helped themselves. Every one was kindness itself, and every one wanted to know if there was any service they could render us; if so, they were quite at our disposal, etc.

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

October.

MEATS.—Beef, mutton, ham, kidneys, liver, venison, sausage.

GAME AND POULTRY.—Pigeon, chicken, duck, woodcock, brant, grouse, partridge, rabbit, snipe, goose.

FISH.—Bass, blackfish, bluefish, clams, cod, crabs, eels, carp, catfish, flounder, halibut, herrings, lobster, mackerel, mussels, oysters, pike, porgie, prawn, rockfish, salmon, sea bass, sturgeon, smelt, turtle, white fish, whiting.

VEGETABLES.—Artichokes, beets, beans, broccoli Brussels sprouts, cabbage, carrots, cauliflower, corn, cucumbers, egg-plant, garlic, lettuce, onions, parsley, parsnips, potatoes, radishes, rhubarb, savoy, shallots, spinach, squash, tomatoes, turnips, watercress.

FRUITS.—Apples, bananas, blackberries, grapes, melons, oranges, peaches, pears, pineapples.

PRACTICAL RECIPES.

EEL SOUP.—Clean and cut into pieces three pounds of eels, measure them, and add two-thirds as much water as fish, then add a little mace, a sliced onion, a little whole pepper, some sweet herbs, and a crust from the top of a loaf of bread; cover closely, and stew until the fish begins to fall to pieces, then strain. Toast some slices of bread a good brown without burning, and cut them into dice; cut into pieces a piece of boiled carrot, put them in a tureen and pour in the soup. Boiling cream, slightly thickened with flour, may be added if liked.

STEWED BREAST OF MUTTON.—Bone and score the breast, season well with cayenne and black pepper and salt; put it in a pot, cover with broth or gravy and stew until tender, skimming off the grease as it rises. Slice a few gherkins and boil them up once with a table-spoonful of mushroom ketchup. Dish the mutton and pour the sauce over it.

BEETS.—Slice some cooked beets and heat the slices between two plates in the oven. Make a piquante sauce, boil some button onions, put them in the sauce, and pour it in the centre of a dish and serve with the beets around it.

OYSTER AND SCALLOPED PIE.—Take one pint of fresh scallops and wash them in cold water; drain, and dry them in a napkin. Cut a few slices of fat bacon in strips small enough to insert the ends in a larding-needle; lard the scallops with them, and dredge them slightly with flour. Select one quart of fat oysters; line a baking-dish with puff-paste; add the scallops and oysters in layers; season with salt, pepper, and a dash of mace. Divide an ounce of butter into little balls, roll them in flour, and put them between the layers; add the oyster liquor. Cover with a top crust; bake forty minutes in a moderate oven.

KIDNEY OMELET.—Cut a cooked veal kidney into small pieces, and warm them through, with some butter and chopped parsley, in a stewpan. Make an omelet, and before folding add the kidney; sprinkle with salt and pepper, fold and serve, garnished with parsley.

ALMOND CUSTARD.—Make a syrup of one and a half pounds of white sugar; clarify, boil and strain, and put the syrup on again to boil; add a table-spoonful of pounded sweet almonds, and when the syrup is cold pour in the yolks of twelve eggs, well beaten. With a spoon gently keep stirring on a slow fire until it thickens to the consistency of a boiled custard. Place then in individual glasses, and sprinkle powdered cinnamon on top.

COSMETICS.

SOME SAFE SORTS FOR HOME MANUFACTURE.

The prevalent custom of facial high art decoration so marked at the present time, is not only a survival of barbarism, but has great antiquity of origin. Jezebel, you remember, painted her face and tired her head and looked out at a window; and the frivolous Roman Emperor Heliogabalus when he first entered Rome had "his eyebrows tinged black and his cheeks painted with artificial red and white;" and the first court present given to Catharine II. of Russia was a rouge pot, as we read in her memoirs, though the great Catherine was then only fifteen years old. Now, what woman has done through the centuries past she will continue to do through the eras to come, so let her do it wisely. Take a teaspoonful of the powder you use on your face, put it in a glass with the juice of a lemon. If effervescence follows, it is an infallible proof that the powder is dangerous and will injure the skin. If unsuccessful in obtaining pure face powder, then make your own after some of these simple formulas, always remembering that the very best and purest face powder is merely levigated talc passed through a silk sieve. Violet powder is made of wheat starch, in the proportion of six pounds to one pound of powdered orris, one-fourth ounce attar of lemon, one drachm each of bergamot and cloves. Rose face powder consists of rice starch, seven pounds; rose pink, half drachm; attar of roses and santal, two drachms each. The great actress, Vestris, always used a liquid preparation made of rose or orange flower water, one pint; oxide of bismuth, four ounces. These must be mixed by long trituration. A famous rouge called bloom of roses is made with half an ounce strong liquid ammonia, quarter ounce purest carmine, one pint rose water, and half an ounce of triple spirit of rose. Pour the ammonia on the carmine and allow it to remain four days, stirring occasionally; then add the rose water and spirit, and, after letting it stand for a week, decant the bloom of roses. A rose lip salve may be made of one-half pound of almond oil, two ounces of spermaceti and of wax and alkanet or blood root, and one-quarter ounce attar of roses. Place the wax, oil and alkanet root together in warm water, and when the first three are melted let them digest four to six hours on the alkanet root to extract its color. Strain through muslin and add the perfume just before the salve sets. Rusma, a mixture that removes undesirable hairs quickly, is made of three pounds best slaked lime to one-half pound of orpiment in powder; mix in a drum sieve, and keep well corked. To use, mix with water to a cream; apply to the objectionable hair until the skin smarts, scrape it away with a bone or ivory paper knife, wash the place carefully and apply cold cream. For the eyebrows take half an ounce Indian ink, rub down in a fine mortar, rub in half a pint of fine rose water, and after standing two or three days, with frequent stirring, it is ready to be applied with a fine camel's-hair brush. Sulphide of antimony, in which a blunt bodkin of ivory is wetted and drawn along the edges of the eyes beneath the eyelashes, adds much to the brilliancy of the eye and makes it seem larger. It is used in Egypt and Greece to-day, and is an old custom. Finally, the make-up, however pure, must be carefully washed off at night with pure soap and hot water, which may be followed by an application of cold cream or glycerine lotion. Cold cream contains one pound each of almond oil and of rose water, one ounce each of white wax and spermaceti, and one-half drachm of attar of roses. Boil the wax and spermaceti and oil in a double boiler of porcelain, and drop the rose water in, stirring constantly. The lotion contains one gallon orange flower water, eight ounces of glycerine, and one ounce borax. —*Sun.*

QUICK COOKERY.

A CHICKEN KILLED, CLEANED AND BROILED IN SIX MINUTES.

Prince Bismarck's old chef, who is now head cook in a big Berlin restaurant, recently won a novel bet, and gave a surprising exhibition of his mastery of the culinary art. He had wagered $25 that he could kill, clean, cook, and serve a chicken, all in six minutes. The wager was decided at night in the café of the restaurant in the presence of a big crowd. The cook appeared at nine o'clock on an improvised platform, upon which stood a gas cooking stove. He held a live chicken high above his head, and the fowl cackled loudly. One blow of a keen carver severed the head from the neck, and the cook began to pick the feathers with great swiftness. It took just one minute to get rid of every feather. In less than another minute the expert had opened and cleaned the fowl and had placed it upon a broiler on the gas stove. The cook busied himself at the broiler, seasoning the fowl as it cooked. It lacked just a second of the sixth minute when he stepped from the platform and served the chicken to the nearest guest, to great applause.

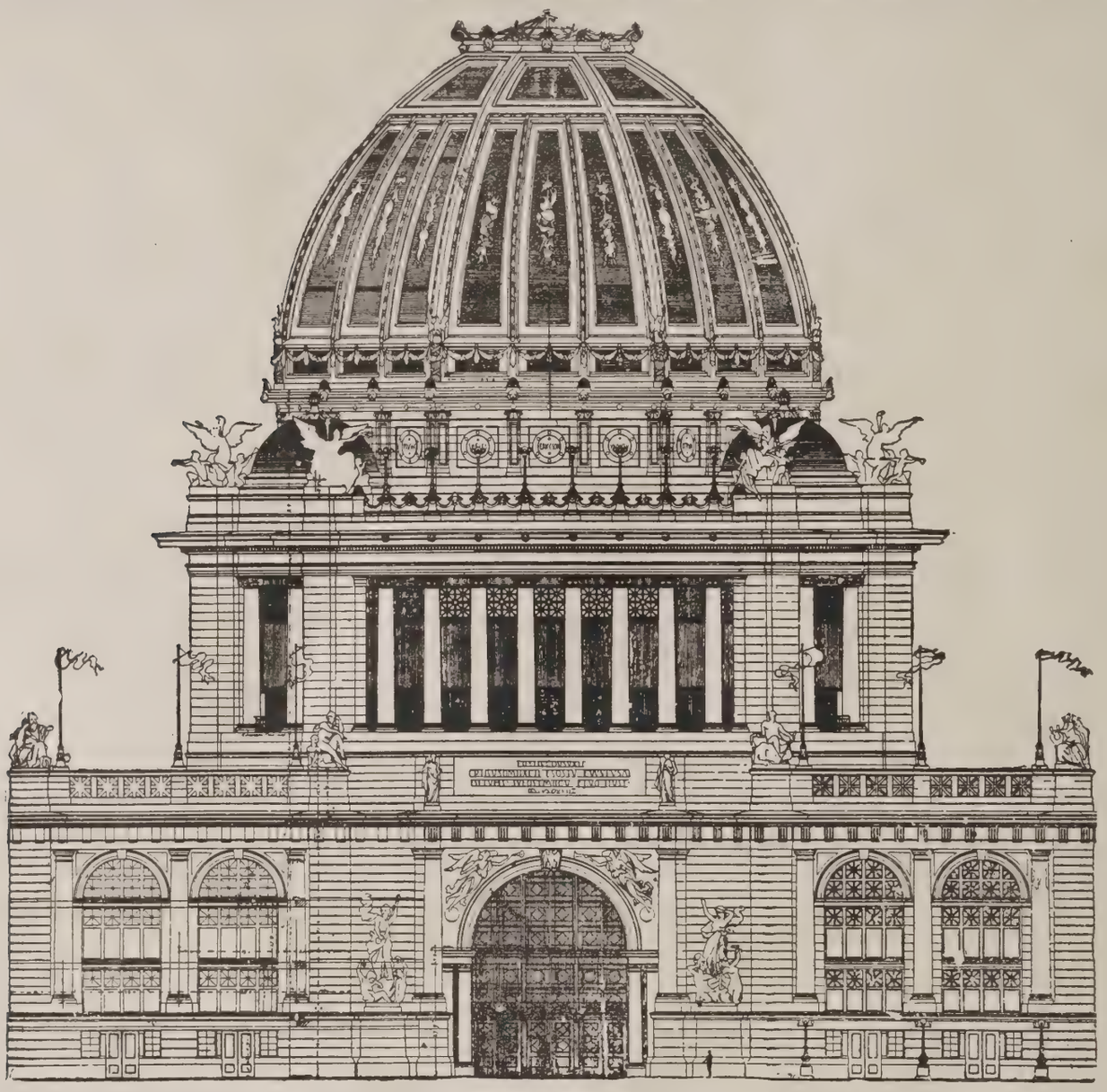
FOSSIL FLOUR.—A deposit of what is known as "fossil flour" has been recently discovered in Maine which will resist the action of acids, alkalies and oils, and is a remarkable non-conducter of heat.

ROTATION OF LABOR.—Dr. William A. Hammond says that even well-to-do Americans require more rest than any other people in the world, and get less. He thinks a human being should have a succession of labors and diversions as a farm has rotation of crops.

NEW EXPLOSIVE.—A French engineer has discovered a new explosive which he calls "fortis." He has asked for permission to undertake, at his own expense, the work of blowing up the famous rocks known as the "Iron Gates" of the Danube, which have hitherto resisted the action of all explosives.

NOVEL CUTWATER.—An English inventor has constructed a novel device to do away with the enormous pressure of water against the bows of ocean steamers. It consists of one or more screws on each side of the bow, which throws the water aside and creates a dry well in front of the vessel.

LAPSTREAK STAVES.—A new and improved barrel has been perfected. Each alternate stave is of a soft variety of wood and slightly thicker than their harder neighbors. When the hoops are driven down on to these barrels, the cracks which are noticed just where the staves are put together are closed up by the hard being pressed into the soft staves, and the thicker section of the latter causes them to overlap the edges of the hard staves. Thus the barrel is made tighter than the ordinary, and will be found much more durable.—*The Manufacturers' Gazette.*



THE COLUMBIAN ANNIVERSARY.

THE CHICAGO WORLD'S EXPOSITION OF 1893.

We present the readers of the AMERICAN ANALYST herewith an illustration of the Administration Building that is to grace the Columbian Exposition in Chicago two years hence, and we shall have occasion hereafter to publish further illustrations of that great enterprise. The foundation work of the Administration Building is all finished, and the material for the iron work of the edifice itself was expected to be received on the grounds by the middle of the present month. This building is the gem of all the architectural jewels of the exposition. Constructed of material to last but two years, it will cost $650,000. Although it covers a space but 250 feet square, yet it is one of the noblest achievements of modern architecture. It will occupy the most commanding position on the exposition grounds. The building consists of four pavilions, 84 feet square, one at each of the four angles of the square of the plan, and connected by a great central dome, 120 feet in diameter and 260 feet high. In the center of each facade is a recess, 93 feet wide, within which is a grand entrance to the building. The first story is in the Doric order, of heavy proportions. The second story, with its lofty colonnade, is in the Ionic order. Externally, the design is divided into three principal stages. The first stage consists of the four pavilions, corresponding in height with the buildings grouped about, which are 65 feet high. The second stage is of the same height and is a continuation of the central rotunda, which is 175 feet square. The third stage is the base of the great dome, 40 feet high and octagonal in form, and the dome itself, rising in graceful lines, richly ornamented with heavily moulded ribs and sculptured panels, and having a large glass skylight. The interior effects will be even more gorgeous than the exterior, resplendent with carvings, sculptures, and immense paintings. Aside from the cost of the great buildings, which will not be far from $7,000,000, the following are among the sums which have been, or will be, spent in preparation of the exposition grounds: Grading and filling, $450,000; landscape gardening, $323,500; viaducts and bridges, $125,000; piers, $70,000; waterway improvements, $225,000; railways, $500,000; steam plant, $800 000; electric lighting, $1,500,000; statuary, $100,000; vases, lamps, etc., $50,000; lake-front adornment, $200,000; water supply and sewerage, $600,000; other expenses, $1,000,000; total, $5,943,500. The total expense of organization, administration and operation of the exposition is estimated at nearly $5,000,000 This takes no account of the sums spent by the Government, the States, or foreign nations. The criticisms upon Chicago for seeking a loan of $5,000,000 from the National Government seem to be based chiefly upon a misapprehension of the causes which impelled that action. The scope of the fair has broadened. The loan is not to supplant but to supplement the $10,000,000 raised by the citizens and municipality of Chicago. Some idea of the immensity of the enterprise may be had if it is understood that the space set apart for exposition purposes is three times the area of the Paris grounds, or about the size of Central Park, New York. Japan is to be well represented at the Exposition. One plan is to export a number of dancing girls to give zest to Japanese cookery. Another contemplates a large Japanese garden, stocked with dwarf shrubs and other horticultural curiosities. Artificial flower making, basket weaving and other accomplishments in which Japanese excel, will also be represented. It was announced that the National Association of Woolen Manufacturers and the American Pottery Association would make splendid exhibits at the Exposition. The desire of both of the organizations, it appears, is to show foreign manufacturers of the same line of goods just what can be done in America. Special Commissioner Adler, at Constantinople, says that a Turkish exhibit is assured. It is understood that the Government of Columbia is preparing a photographic exhibit for the Exposition, which will include a complete collection of views illustrating types of people and their customs, habits and industries. Lieut. Scriven, the South American Commissioner, cabled that Costa Rica would appropriate $100,000 for exhibition purposes, instead of $50,000, as reported, and has asked for one acre of space for buildings and exhibits. Leigh Lynch asked for the privilege of exhibiting at the Exposition a Japanese village. On the display of this village Mr. Lynch said he was willing to expend $50,000, and the committee decided to recommend that 20,000 square feet of space on the Midway Plaisance be reserved for the exhibit.

DYSPEPSIA AND INDIGESTION.

Digestion is so beautiful a process, from a scientific point of view, that the stomach has been aptly called a laboratory. The assimilation of a hearty meal calls into operation a dozen different principles, each of interest and wondrous delicacy. In the stomach the gastric juices attack the food, converting all the meat substances and similar bodies into thick, rich liquids. This is absorbed, when it reaches the intestines, by a curious network which lines a large part of these organs, and which is the strongest, most durable and efficient filter known to science. It passes through a system of ducts which seem to exert some undiscovered chemical action, and is then pumped into the blood. In health this process is repeated from birth to death unnoticed, except in the painful sensation produced by hunger and the deep delight which waits an appetite and good digestion. It is self-regulating, working a maximum in the case of the day laborer and a minimum in the case of the invalid or the man of idle leisure. Ill-health affects these divine processes in many ways, but with one result. Indigestion or dyspepsia of some form is the sure consequence. It may be in the inactivity of the salivary glands, as occurs to habitual smokers and chewers of tobacco; it may be a temporary paralysis of the nerves which supply the assimilative centres, as happens to opium fiends and users of hasheesh; it may be the stopping or the lessening of the formation of pepsin, pancreatin, cholein, cholestein, or other principles essential to digestion; or it may be an intense local inflammation of the nerves, so as to produce the terrible agony we call gastralgia. It requires no further explanation to realize that any system which proposes to cure indigestion by giving those elements made lacking by the disease can only afford temporary relief, but cannot effect a permanent cure. What is needed is to rebuild the system and strengthen the great vital functions so as to do away with the symptoms we call disease, and which too often we fancy to be the real ailment from which we suffer. It is a simple process, neither costly nor painful. All that is required is to keep the skin thoroughly clean and the bowels well opened; to exercise and be as much as possible in the sunlight and fresh air; to maintain regular hours and early ones if possible; to associate with pleasant companions, and to use with religious regularity Ayer's Sarsaparilla. This superb preparation does not affect the stomach directly, unless through its pleasant flavor it acts as an appetizer. But after it enters the system it purifies the blood, tones up and stimulates every organ of the body, and in so doing restores every process to its normal activity. Where indigestion is of very long standing, it will require some time for the sarsaparilla to produce a real cure. When it is acute or recent, the famous compound will dispell the trouble in a few weeks. Taken whenever the organization demands it, it will absolutely prevent indigestion or dyspepsia in any one of their protean forms. To the scientific mind, it is the only medicinal substance known which will put the digestive organs into complete health.

BUSINESS NOTES.

HORSFORD'S ACID PHOSPHATE

Relieves indigestion, dyspepsia, etc. Dr. W. E. Crane, Mitchell, Dak., says: "It has proven almost a specific for this disorder; it checks the vomiting, restores the appetite, and, at the same time allays fear of impending dissolution, that is so common to heavy drinkers."

A NEW WINTER RESORT.

The Arrowhead Hot Springs are situated in San Bernardino County, California. They are a mountain resort 2,000 feet above sea level, and possess all the advantages of the justly celebrated salubrious climate of California, a beautiful location and valuable hygienic resources. A fine hotel has been erected containing every modern improvement, and is managed by Dr. H. C. Royer, which assures good accommodation, fine table, and at moderate cost. This resort being on the Southern Pacific Railroad, is easily reached. By addressing Dr. Royer, at Arrowhead, Cal., circulars giving full particulars may be had.

ARMOUR'S PEPSIN.

The editor of the *National Druggist*, who is one of our best microscopists, speaks as follows of Armour's Pepsin: After thoroughly studying the matter, and employing the very best pharmaceutical and chemical talent, a short time ago they commenced to extract the digestive ferments from the stomach and pancreas of the slaughtered animals, and to manufacture Pepsin and Pancreatin on a scale never before attempted in the world's history. They then commenced to make a market for their products, and, by judicious sampling of physicians and wide advertising, they have created a demand for them among the medical profession. The writer has received samples of the pepsins made by Armour & Co., and can say of his own knowledge that they are the most excellent, being freer from odor than any other in the market, and of a high digestive value.

A STOVE WITHOUT A CHIMNEY.

When one is told that a stove may be bought which requires no chimney, and yet makes no smoke, nor does it give off any gas or unpleasant smell. It is the "Sestalit," which uses a fuel chemically prepared from wood. The stove is a common cylinder of Russia iron or japanned iron, containing a kettle with a grate bottom, in which the fuel is placed. Underneath is a

BUFFALO LITHIA WATER

For BRIGHT'S DISEASE OF THE KIDNEYS, THE GOUTY DIATHESIS, Etc.



Dr. WM. A. HAMMOND'S Sanitarium for Treatment of Diseases of Nervous System, 14th Street and Sheridan Avenue, Washington, D. C.

Dr. WM. A. HAMMOND,

WASHINGTON, D. C.,

Surgeon-General U. S. Army (retired), formerly Professor of Diseases of the Mind and Nervous System in the University of New York, etc., says:

"I have for some time made use of the

BUFFALO LITHIA WATER

in cases of affections of the Nervous System, complicated with Bright's Disease of the Kidneys, or with a Gouty Diathesis. The results have been eminently satisfactory. Lithia has for many years been a favorite with me in like cases, but the

BUFFALO LITHIA WATER ACTS BETTER THAN ANY EXTEMPORANEOUS SOLUTION

of the Lithia salts, and is, moreover, better borne by the stomach. I also often prescribe it in those cases of cerebral hyperæmia, resulting from over mental work—in which the condition called nervous dyspepsia exists—and generally with marked benefit."

WATER IN CASES OF ONE DOZEN HALF GALLON BOTTLES, $5.00, F. O. B. HERE.

☞ For sale by all first-class Druggists, and Pamphlet sent to any address.

THOMAS F. COODE, Proprietor, Buffalo Lithia Springs, Va.

☞ Please mention the AMERICAN ANALYST.

drawer to receive the ashes, and this drawer also contains a circular receptacle to hold an asbestos sponge, which is saturated with alcohol and lighted to ignite the fuel above. The stove, which weighs only about twenty pounds, is provided with a bail or handle by which it can be carried from room to room when lighted. The fuel comes in square tubes, ten of which make a light charge for the fire. About twenty-five weigh two pounds, and will last ten hours. The fuel costs five cents per pound. The stove may be seen in operation at 19 Park Place and at 21 East 42d Street.

FOREIGN WHEAT.—Seven out of every eight loaves of bread eaten in London are made from foreign wheat.

SMOKELESS FIRING.—A Limoges firm has introduced a new problem of firing porcelain by means of a very pure heat without smoke or fumes.

INDESTRUCTIBLE ROPE.—In Southern Arizona there grows a plant from which rope and twine that will almost never wear out can be made. It is the mescal plant. But very little of this rope has been made thus far

ORIGINAL. No. 53.

Luncheon Muffins.

BY MARIA PARLOA.

For one dozen muffins use one pint of flour, a generous half pint of milk, two teaspoonfuls of Cleveland's Baking Powder, half a teaspoonful of salt, two tablespoonfuls of sugar, three tablespoonfuls of butter and two eggs. Mix the dry ingredients together and rub through a sieve. Melt the butter. Beat the eggs till light and add the milk to them. Add this mixture to the dry ingredients; then stir in the melted butter. Beat the batter vigorously for a few seconds and then put in buttered muffin pans and bake for about twenty minutes in a quick oven.—(Copyright, 1891, by Cleveland Baking Powder Co.)

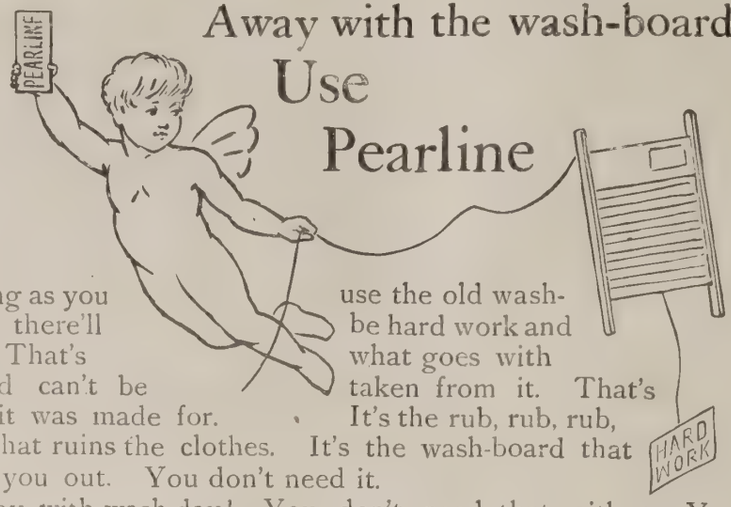
Use only Cleveland's baking powder, the proportions are made for that.



Cleveland's Superior Baking Powder is perfectly wholesome. It leavens most and leavens best.
Try a can.

Fine Table Wines
From our Celebrated Orleans Vineyard.
Arpad Haraszthy & Co.
Producers of the
ECLIPSE
CHAMPAGNE,
530 Washington St.
SAN FRANCISCO.
GENERAL AGENCIES:
NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOSEPH R. PEEBLES SONS CO., 73 West Fourth Street.
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.

Away with the wash-board
Use Pearline



As long as you use the old wash-board there'll be hard work and waste. That's what goes with it, and can't be taken from it. That's what it was made for. It's the rub, rub, rub, on it that ruins the clothes. It's the wash-board that wears you out. You don't need it.

Away with wash-day! You don't need that, either. You don't set apart a day for washing the dishes. Wash the clothes in the same way, with no more work, a few at a time.

But you'll have to use *Pearline* to do it. *Pearline* only can rid you of wash-board and hard work; with it you can do your washing when you like. And you can do it safely, too. Directions on every package.

Away with the peddlers and prize givers, who say their imitations are "as good as" or "same as" Pearline—IT'S FALSE—Pearline is never peddled and has no equal. Sold by all grocers. 246 JAMES PYLE, New York.

TOO TRUE.—"Did you see the notice I gave you?" said the editor to the grocer, "Yes; and I don't want another. The man who says I've got plenty of sand, the milk I sell is of the first water, and my butter is the strongest in the market, may mean well, but he is not the man I want to flatter me the second time."

SALT LAKE.—Great Salt Lake in Utah has been computed to contain, if its water were evaporated, 193,000,000,000 cubic feet of salt, or 13,510,000 000,000 pounds. Spread this out a foot in depth and a quarter of a mile wide, and it will make a band around the earth at its greatest circumference. Load it in railway cars, and it will take 675,500,000 of them to carry it.

NEW PROCESS.—Charles Henderson, of Titusville, Pa., has made an important discovery, which he claims will reduce the cost of steel tools from 40 cents to 4 and 5 cents a pound. This process makes it possible to use the ordinary soft machine-steel for all kinds of tools, rendering them equal to high-grade silver-steel for all kinds of work. There is no breaking or flaw in the tempering.

CHEAP AND TASTEFUL.—For bedroom papers less expensive ones can be used than for halls, parlors, and drawing-rooms. One very dainty, pretty pattern has a delicate gray ground on which runs a pattern of wild flowers in "baby" blue. A narrow frieze of "baby" blue is at top and bottom, and a delicate ceiling pattern in "baby" blue and gray makes a charming little chamber and is inexpensive.

A ROLAND FOR AN OLIVER.—While cross-examining Dr. Warren, a New York counsel declared that doctors ought to be able to give an opinion of a disease without making mistakes. "They make fewer mistakes than the lawyers," responded the physician. "That is not true," said the counselor: "But doctor's mistakes are buried six feet under ground, a lawyer's are not." "No," replied Warren, "but sometimes hung as many feet above the ground.

FREAKS' JUBILEE.—At the Register's office in South Shields, England, on April 26, a girl only 32 inches high was married to professor Hedley, 6 feet 1 inch high. Humbert, the man without arms, gave the bride away, signing the certificate by holding the pen between his teeth. The bridesmaid was Miss Nina, the American giantess, who weighs 616 pounds. The best man was Capt. Dallis, 7 feet 10 inches in height. Gen. Metilone, 29 inches high, was one of the wedding party. All were connected with a traveling circus going through the country.

"BILLET"
are
Carefully Selected
French Sardines,
Packed in Choicest Olive Oil.
AT ALL LEADING GROCERS.

GOITRE, or THICK NECK.
I have a positive, speedy, cleanly, harmless and almost inexpensive cure. Come or write to me at 28 Arlington Court, CLEVELAND, Ohio. It is no iodine smear. Cure made permanent.
Dr. J. CASKEY.

Armour's
Extract of BEEF.
The best and most economical "Stock" for Soups, Etc.
One pound equals forty-five pounds of prime lean Beef.
Send to us for our book of receipts, showing use of ARMOUR'S EXTRACT in Soups and Sauces.
ARMOUR & CO., Chicago.

GRANT.

SHERMAN.

SHERIDAN.

McCLELLAN.

GEN. GRANT'S MEMOIRS.

Original $7 Edition for 30 Cents.

NO book, excepting the Bible, has ever had such a sale in the United States as General Grant's Memoirs. 650,000 copies have already gone into the homes of the rich, but the subscription price of $7.00 has placed it beyond the reach of people in moderate circumstances. **If 650,000 people have been willing to pay $7.00 for Grant's Memoirs, there must be a couple of million people in the United States who want them, and will jump at the opportunity** to buy them at the low figure here offered.

We will send you General Grant's Memoirs, publisher's original edition, best paper, cloth, green and gold binding, hitherto sold by subscription at $7.00,

FOR 30 CENTS!—FOR 30 CENTS!—ABSOLUTELY ONLY 30 CENTS!

and absolutely a proposition such as has never been made in the history of book publishing. The two splendid volumes of Grant's Memoirs, of which 650,000 copies have been already sold—not a cheap edition, but the best—for 30 cents; provided you send your subscription of $1.00 to the **AMERICAN ANALYST** one year, and also a subscription of $3.00 for the **COSMOPOLITAN MAGAZINE,** the brightest and cheapest of the great illustrated monthlies, itself equal to the best $4.00 magazine.

The **COSMOPOLITAN** is enabled to make this offer because of **the purchase of 600,000 volumes at a price which even publishers would deem impossible, and with the idea of running up its circulation to half a million copies.** By contract with the **COSMOPOLITAN,** and at no profit to us, we are enabled to offer our readers a share in the low price obtained through the largest purchase of books ever made in the history of the world.

If, however, you have Grant's books, our offer will permit you to take instead,

GEN. SHERMAN'S MEMOIRS, 2 Vols., sold by subscription for $5.00
GEN. SHERIDAN'S MEMOIRS, 2 Vols., sold by subscription for 6.00
GEN. McCLELLAN'S MEMOIRS, sold by subscription for . . 3.75

All of these are bound in cloth, green and gold, in uniform style with Grant's Memoirs.

Send us at once $3.00 for year's subscription to the **COSMOPOLITAN,** $1.00 for year's subscription to the **AMERICAN ANALYST,** and 30 cents for a set of Memoirs—$4.30 in all—to which add postage on the particular set of Memoirs selected.

WHY DO WE MAKE THESE GRAND OFFERS?

Simply because we want every intelligent family to keep well informed as to the popular science of this progressive era. We publish the **only popular journal on this subject—THE AMERICAN ANALYST.** Its subscription list is already very large; but we want at least **Fifty Thousand additional subscribers before January 1, 1892.** We know that, if we shall get them, we shall be able to hold most of them as permanent readers of our periodical. So at present sacrifice and at great cost, we have entered into a combination. The **COSMOPOLITAN** is the brightest and cheapest of the great illustrated monthly magazines; it gives annually 1,536 pages by the ablest writers, and over 1,200 illustrations by the ablest artists; and is just as interesting to the young boy or girl as to the oldest grey head. Now, then, we ask you to send us merely $4.30, and, on receipt of same, we will mail them to you regularly for **one year,** and will also send you (making no charge for the books) a set of **GENERAL GRANT'S MEMOIRS,** or either of the other works that you may select. **NO SUCH OFFER AS THIS WAS EVER MADE BEFORE BY ANY PUBLISHER SINCE TIME BEGAN!**

UNLESS OTHERWISE DIRECTED,

we shall invariably ship the books by express, charges to be paid by the receiver. If you wish the volumes forwarded by mail, you must distinctly say so at the time when you send us your address and the Money; and you must also enclose postage to prepay the packages at the following rates: **GRANT'S MEMOIRS,** 96 ozs., 48c.; **SHERMAN'S MEMOIRS,** 92 ozs., 46c.; **SHERIDAN'S MEMOIRS,** 84 ozs., 42c.; **McCLELLAN'S MEMOIRS,** 48 ozs., 24c. The government rate for postage on books is one-half cent per ounce. The **COSMOPOLITAN** and **AMERICAN ANALYST** are sent to subscribers free of postage.

SEND ALL ORDERS ADDRESSED

THE ANALYST PUBLISHING CO.,

19 Park Place, New York.

HARTSHORN'S SELF-ACTING SHADE ROLLERS

NOTICE SCRIPT NAME OF Stewart Hartshorn ON LABEL, AND GET THE GENUINE HARTSHORN

THE New Model "HALL"



1 Perfect Typewriter. Best Manifolder. Terms to Agents Liberal. Portable. Inexpensive. Writes All Languages. *Read Mr. Howell's Opinion.*

"I wish to express my very great satisfaction with the Hall typewriter. Impressions and alignment are both more perfect than any typewriter that I know, and it is simply a pleasure to use it. It is delightfully simple and manageable."

(Signed) W. D. HOWELLS.

Send for Catalogue and Specimens of work.

Address N. TYPEWRITER CO., 10 Temple Pl., BOSTON.

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,

HOWARD STREET. BOSTON, MASS.

SWIFT'S

CHOICE

Chicago Dressed Beef

AND

MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,

UNION STOCK YARDS,

CHICAGO, ILLS.

EVERY one in need of information on the subject of advertising will do well to obtain a copy of "Book for Advertisers," 368 pages, price one dollar. Mailed, postage paid, on receipt of price. Contains a careful compilation from the American Newspaper Directory of all the best papers and class journals; gives the circulation rating of every one, and a good deal of information about rates and other matters pertaining to the business of advertising. Address

ROWELL'S ADVERTISING BUREAU,
10 Spruce St., New York.



PRINT YOUR OWN CARDS

PRESS $3.00
Circular Size $8.00
Press for a small newspaper $44.

SAVE MONEY! Make money printing for others! Type setting easy; printed instructions. Send 2 stamps for Catalogue of Presses, Type, Cards, Paper, etc., to the Factory.

KELSEY & CO.
Meriden, Connecticut.

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

BROMO SODA.

Useful in Nervous Headache, Sleeplessness, Excessive Study, Over Brainwork, Nervous Debility, Mania, Etc.

DOSE—A heaping teaspoonful in half a glass of water, to be repeated once after an interval of thirty minutes, if necessary. Each teaspoonful contains 30 grs. BROMIDE SODIUM and 1 gr. CAFFEIN.



SUPPLIED BY ALL DRUGGISTS

Ask for (Bromo-Soda, Warner & Co.) and take no other "Bromo."

Pure Lager Beer,

"IMPERIAL" and "CULMBACHER"

Brewed & Bottled

SPECIALLY FOR HOTELS, CLUBS AND PRIVATE FAMILIES

BY

Beadleston & Woerz

291 W. 10th St. New York.

Orders by Postal Card promptly attended to.

We can save you Fifty Dollars when you Build. See



A complete set of Plans to build from, simply state about price of dwelling desired. 25 cts. in stamps. Our book "Beautiful Homes." 25 cts. Our monthly book "The National Builder." 25 cts. Address

The National Builder, Adams Exp. Bldg., Chicago, Ill.



THE ORIGINAL AND GENUINE
(WORCESTERSHIRE SAUCE).

LEA & PERRINS' SAUCE



In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—

Lea & Perrins

Beware of Imitations; see that you get Lea & Perrins'

For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS. NEW YORK.

RHEUMATISM AND NEURALGIA

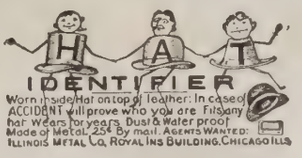
are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,
184 Greenwich St., N. Y.

25c. THE DAISY STAMPING OUTFIT. 25c.

STAMPING BY AN ENTIRELY NEW PROCESS. No more ironing or cleaning of patterns, no powder to use. Our Outfit has OVER FIFTY NEW DESIGNS—Children, Birds, Animals, Flowers, Leaves, Ferns and Mottoes in great variety; Borders in rich styles, and a complete Alphabet, together with a bottle of STAMPING FLUID, which makes an instantaneous impression, and is absolutely certain, cleanly and easy to use. Every lady can do her own stamping at home. GREATEST BARGAIN EVER OFFERED. No other outfit has this Patent Fluid. Designs SUPERIOR to many outfits sold for $1.00. We will sell this wonderful Outfit, for a short time only, at 25c. POSTPAID to advertise our other goods. Send at once. We fill orders promptly. Address

EUREKA MANUFACTURING CO., Hinsdale, Ills.



GOLD MEDAL, PARIS, 1878.



W. BAKER & Co.'s Breakfast Cocoa

from which the excess of oil has been removed,

Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

TABASCO PEPPER SAUCE,

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced by connoisseurs to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY'S SON,

NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

ESTABLISHED IN LONDON, 1831.

DEAN'S PATENT Ardenter Mustard



W. G. DEAN & SON,
361 & 363 WASHINGTON STREET, 84, 86, & 88 NORTH MOORE STREET, N.Y.

AMERICAN ANALYST CLUB RATES.

WE have made arrangements by which we can furnish to our readers any of the periodicals named below at a club rate, with the AMERICAN ANALYST, at a considerable saving. Should any periodical not mentioned be desired, or several of the journals, drop us a postal card and we will give you a rate promptly. For sample copies address the publishers. Terms strictly cash, in advance.

	Publishers' Price.	Our Price, including AMERICAN ANALYST, One Year.
Arthur's Home Magazine	$1.50	$2.35
Babyhood	2.00	2.50
Century Magazine	4.00	4.50
Christian Herald, N. Y.	1.50	2.00
Christian Union, N. Y.	3.00	3 50
Cosmopolitan Magazine (See our Premium Offer.)	3.00	3.25
Cottage Hearth	1.50	2.00
Current Literature	3.00	3.50
Demorest's Magazine	2 00	2 50
Family Story Paper	3.00	3 25
Farm and Fireside	.50	1.40
Fireside Companion	3.00	3.50
Forum	5.00	5.25
Frank Leslie's Illustrated Newspaper	4.00	4.50
" " Popular Monthly	3.00	3.50
Garden and Forest	4.00	4.25
Godey's Ladies' Book	2.00	2.50
Golden Days	3.00	3.50
Good Housekeeping	2.40	3.00
Harper's Bazaar	4.00	4.50
" Young People	2.00	2.50
" Weekly	4 00	4.25
" Magazine	4.00	4.25
Home Magazine (Mrs. Logan's)	.50	1.25
Judge	5.00	5.00
Ladies' Home Journal	1.00	1.75
Ledger, New York	2.00	2.50
Life	5.00	5.50
Lippincott's Magazine	3.00	3.25
Magazine of American History	5.00	5.00
New York Weekly	3.00	3.50
Our Day, Boston	2.50	3.25
Outing	3.00	3.50
Peterson's Magazine	2.00	2.50
Popular Science Monthly	5.00	5.25
Puck	5.00	5.00
Review of Reviews	2.00	2.75
Scientific American	3.00	3.50
Scribner's Magazine	3.00	3.25
Youth's Companion	1 85	2.50

ADDRESS THE ANALYST PUBLISHING CO., 19 Park Place, New York.

THE QUEEN'S PRIZE SCHOOL OF HISTORY.

About two years ago the publishers of THE CANADIAN QUEEN added what has proven to be a very popular and successful feature to their publication in establishing their Prize History School. It has offered competitive examinations in English, Canadian and American History, giving valuable rewards to those making the most correct answers. During this time there have been added the names of over forty thousand new subscribers to their books. Rewards have been made by THE QUEEN which have cost them in cash over ten thousand dollars. THE QUEEN'S Prize School of History has received the sanction and support of the clergy, press, and, in fact, of the best people of the Dominion of Canada. The following, taken from a leading daily newspaper, expresses an opinion which is universal:

A HANDSOME PRIZE.

AN EVIDENCE OF WHAT A GENUINE MAGAZINE COMPETITION OFFERS.

"On Friday there arrived from Toronto, for Miss M. Hora, a handsome Shetland pony, harness and cart, being the first award in the Royal Quilt Competition of THE CANADIAN QUEEN magazine. It attests the genuine nature of the magazine's contests by its excellent condition and value. THE QUEEN has frequent competitions and has made innumerable awards, displaying a generosity quite surprising to those who have had experience of the limited field for Canadian journalistic enterprise. But THE QUEEN has been a success as a business venture from the start, and is growing in literary excellence steadily. It covers the field of fashion, as well as light reading; talks to the household, the young, and, indeed, all home classes. The competitions have been used to assist the introduction of the magazine, for where it is introduced it is quite certain to remain a monthly guest. The leading prizes have been made, as instance this latest to Kingston, while many smaller prizes have rewarded the moderately successful among competitors. THE CANADIAN QUEEN is truly royal in its ways."—*The (Kingston, Ont.) Daily British Whig*, June 27th, 1891.

QUESTIONS IN AMERICAN HISTORY.

1.—Give the names of the early navigators who it is claimed by historians first discovered America.
2.—From whom has America taken its name?
3.—What class and nationality first settled Virginia? New York? Massachusetts? Pennsylvania? Maryland?
4.—What action did the Continental Congress of 1774 take and what was the result of that action?
5.—What was the first battle fought in the War of the Revolution?
6.—What nation rendered the Americans great assistance in the War of the Revolution?
7.—Give the names of the committee appointed to draft the famous Declaration of Independence.
8.—What was the date of the signing of the United States Constitution?
9.—After becoming a nation and before the great Civil War, what were the principal conflicts which engaged the Americans?
10.—What was the direct cause of the Civil War? What Generals of the Northern Army have occupied executive positions under the Federal Government since the closing of the War? Who was Commander-in-Chief and who were the principal Generals of the Confederate Army during the struggle?
11.—How long did this War last and what is the computed loss of life?
12.—What can be said to day of the United States as a nation?

To the *First* gentleman sending the correct answers to the above questions in American History the publishers of THE QUEEN will present "**Majestic**" acknowledged the **Handsomest and Finest Riding Horse in Ontario.** ("Majestic" is sixteen hands high, thoroughbred, seven years old, and valued at $350.00.) To the *First* lady the publishers of THE QUEEN will present an elegant **Jacket of Genuine Alaska Seal** to be made according to the measurement supplied by the winner. To the *First* boy under sixteen years of age the publishers of THE QUEEN will present a **Little Giant Safety Bicycle** valued at $75.00. To the *First* girl under sixteen years of age the publishers of THE QUEEN will present an elegant **Music Box,** playing twenty tunes, finely finished and valued at $55.00.

To the gentleman from whom the *Last* correct answers are received before the close of this Competition, the publishers of THE QUEEN will present a **First Cabin Passage to Europe and Return** and **$200 in Gold** for expenses. This trip can be taken by the winner any time before October 1st, 1892. To the lady from whom the *Last* correct answers are received before the close of this Competition the publishers of THE QUEEN will present a **Pony, Cart and Harness.** To the boy under sixteen years of age from whom the *Last* correct answers are received before the close of this Competition the publishers of THE QUEEN will present a **Solid Gold Watch** containing one of the best American movements, and valued at $75.00. To the girl under sixteen years of age from whom the *Last* correct answers are received before the close of this Competition the publishers of THE QUEEN will present an elegant **Solid Gold Watch,** containing one of the best American movements, and valued at $65.00.

ADDITIONAL PRIZES IN ORDER OF MERIT: Silver Tea Services, Ladies' Gold Watches, Silk Dress Patterns, French Mantel Clocks, Portiere Curtains, Toilet Cases, Manicure Sets, and many other useful and valuable articles.

The object of the publishers in offering these liberal prizes is to introduce THE QUEEN Magazine into **new** homes. Answers must be mailed *on or before* November 10th, 1891, and must be accompanied by $1.00 for one year's subscription to THE CANADIAN QUEEN. Prizes awarded to subscribers residing in the United States will be shipped to them **free of duty.** The distribution of awards is in the hands of disinterested persons, and decisions will be based on the correctness of answers. Use your own language in wording the answers. No corrections can be made after your answers are mailed. THE QUEEN is a large, forty-eight page family magazine, especially interesting to ladies and children, and visits regularly **over one hundred thousand of the best homes** in Canada and the United States. The awards in THE QUEEN'S Prize School of History are made strictly with regard to merit, without partiality to persons or locality. The decisions must be accepted as final. If you have never seen a copy of THE QUEEN send six U. S. two cent stamps and receive a late number, post paid, containing letters from those who have received rewards in previous contests.
Address THE CANADIAN QUEEN, PRIZE SCHOOL OF HISTORY, 58 BAY STREET, TORONTO, CANADA.

GLENN'S SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original and Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,

C. N. CRITTENTON,
115 FULTON STREET,
NEW YORK.

IF you wish to advertise anything anywhere at any time write to
GEO. P. ROWELL & CO.,
No. 10 Spruce St., New York.

AN EDUCATION FREE! Do you want a good business education, including English Branches, Commercial Law, Business Forms or Book-keeping, or Shorthand and Typewriting, Languages, or Architectural or Mechanical Drawing, or Elocution **ABSOLUTELY FREE** in one of the largest, oldest and most prominent Business Colleges in the country? All you have to do is to get up Clubs for the **BUSINESS WORLD,** one of the brightest, newsiest and best office and home papers in the country. Established 14 years. Subscription price, with premium worth price of subscription, only $1.00 per year; handsomely illustrated. The BUSINESS WORLD will give Scholarships to those getting up Clubs. Write for particulars, **BUSINESS WORLD, 15 WILCOX AVE., DETROIT, MICH.**

ARROWHEAD HOT SPRINGS,
CALIFORNIA.

I MOST respectfully invite physicians of the East to write to me for information concerning this famous Southern California resort. The hot mineral water mud baths, and climate are unequalled in America. Diseases of the throat, lungs, liver, stomach and kidneys, nervous and skin troubles and rheumatism, are the ailments successfully treated. The hotel contains 125 rooms, is first-class, and lighted throughout with incandescent lights. Elevation 2,000 feet. Address,

H. C. ROYER, M. D.,
Arrowhead Springs, San Bernardino Co., California.

BLAIR'S PILLS.



Great English Remedy for GOUT, RHEUMATISM and KIDNEY COMPLAINTS.
SURE, PROMPT and EFFECTIVE.
Large Box, 34; Small, 14 Pills.
At all Druggists, and
224 WILLIAM STREET, NEW YORK.

CONFEDERATE MONEY.

Warranted Genuine and in Good Condition.

We are extensive dealers in Confederate Money—rare relics of our late civil war; also Bullets, Cannon Balls, etc. We want agents in every city North to sell these mementoes, and we will pay agents handsomely to sell our goods. We will furnish the money to those desiring at the following retail prices: Shinplasters, 10, 25, 50 and 75 cents each, or the entire set 50 cents. Complete sets, consisting of $100, $50, $20, $10, $5, $2, $1, 50c., $1 per set. $500 bills, $2.50 each. $100 bills, 15 cents, or two for 25 cents. $50 bills, 10 cents, or two for 15 cents. $5 and $20, 5 cents each. 50c., $1 and $2, 25 cents each. Inquirers enclose stamp for reply.
Publishers of SOUTHERN AGENT, Atlanta, Ga.

LITTLE BOYS AND GIRLS
MAKE EASILY $2 A DAY.

Write for particulars. Address
BARKER PUBLISHING COMPANY, Atlanta, Ga.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 44. NEW YORK, THURSDAY, OCTOBER 29, 1891. WHOLE No. 244

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - $1.00 per year
Single Copies, - - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.
Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.
Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,
H. LASSING, M. D., } Editors.
T. P. McELRATH, }
No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

A Gila Monster 523
Bright Stories.
A Very Peculiar Case 520
Chicago Exposition 522
Domestic Dietetics 521
Editorials 517
Adulterated Liquors; German Electricians; Pricking a Humburg.
Hair Springs 519
Jonathan's Daughters 518
Lenses 521
Phantom Parties 521
Sponges 521

ADULTERATED LIQUORS.

In the third biennial report of the Dairy Commissioners of Minnesota, the character of the alcoholic liquors that had been brought to their observation is discussed at length, and an abstract of their conclusions will be found of interest. That there are extensive adulterations and sophistications of wines practiced in the United States, no one will question. It must not be assumed, however, that all wines upon the American market are necessarily of this character, since there is not a particle of evidence to support such a claim. There are sections of this country that produce wines of excellent quality, and there is no evidence on record to show that these native wines are adulterated or sophisticated during their manufacture or before their sale. Chemical analysis of samples of California wine show them to agree closely to the accepted standards, and give no evidence of being other than pure and of good quality. In the examination of beers, it was found that the principal sophistication consisted in the use of cheaper substitute for malt, either in the form of other grain: unmalted barley mixed with the malt, rice flour or glucose. The principal effect of these is the production of a beer which is poorer in albuminoids and phosphates, and is, consequently, less nutritious than it should be. As substitutes for hop bitters, the report mentions picrotoxin and picric acid, but regards their use as rare. Of preservatives, salicylic acid seemed to be the most popular, as nearly one-fourth of the samples examined contained it. No case of direct adulteration was discovered, all variations from the normal article being some fault of curing or clearing, and the above-mentioned substitutes in the manufacture. The report deals harshly with foreign brandy. Most of the brandy imported to this country from France is of inferior quality, frequently by reason of absolute sophistication. The term "brandy" seems to be no longer applied to a spirit produced by fermentation of grapes, but to a complex mixture of alcohol derived from grain, potato or beet-root refuse. Potato and beet-root spirit is shipped into France from Germany and the United States. These are the most objectionable of all spirits, and hence brandy made from them is objectionable. They are flavored and colored, branded and labeled, and shipped to America in large quantities. Physicians frequently order brandy, while when they do so they can confidently expect that one of these mixtures will be supplied to the patient. The report calls attention to the fact, further, that not one of the samples examined by the Dairy Commissioners of New Jersey in 1888 came up to the pharmacopœial standard. Most of the native brandies are genuine, although they have not been aged enough to make them bland and palatable, and many of them contain fusel oil. The most of the samples of whiskey examined were deficient in alcoholic strength, and contained too much solid matter in the form of burnt sugar, glycerine, etc. Two out of fifteen samples examined were not whiskey, but artificial mixtures. Those that were genuine were not properly mellowed by age, and were, therefore, harsh, irritating, and consequently disturb the digestion.

GERMAN ELECTRICIANS.

Germany seems to stand at the front in electrical science. Mr. J. Allen Hornsby, an electrical expert, and one of the World's Fair Commissioners to Kaiserhof, said before he left Berlin last week for St. Petersburg: "Germany is ahead of the United States in the artistic lighting of theatres and residences, and also in the manufacture of dynamos, which get light and power simultaneously from the same alternating machine. It is ahead also in having brought a definite issue in practice, the three-phase alternating system of transmission. Europe is ahead of the United States in almost all directions of electrical science, but America is far away ahead in practice. In America we use every invention our people make. While here, I have been forced to use a candle in the finest hotels, though there is on exhibition a better light, more beautiful and cheaper than anything we know of in America."

PRICKING A HUMBUG.

It is comforting to occasionally meet with a daily newspaper editor who prefers common sense and reason to mere sensationalism. The writer who penned the editorial article published in *The Recorder* of October 19th on the "sure cure" claim that has been so loudly vaunted in behalf of the absurd bi-chloride of gold treatment of dipsomania—a theory about as tenable as that of the Keely motor—is entitled to high praise for being independent enough to see things from a standpoint separate from the advertising department of his concern. He said: "A comparatively unknown doctor, in a small town out West, has suddenly attained an almost National notoriety, and has received an immense amount of gratuitous advertising in newspapers throughout the country, as the discoverer of a new cure for dipsomania. All such cures—like Pasteur's for hydrophobia, Koch's for consumption, and now Keeley's for drunkenness—are at first generally and even jubilantly accepted by the always generous and confiding public. But by medical men these alleged discoveries in their own domain of experience and practice are treated with distrust, or even disdain, until searching scientific investigation shall prove that the new formula has a basis or ingredients which naturally must, not may, effect the cure for which it is prescribed. From such scientific investigation the discoverer of the new cure for dipsomania shrinks. This unwillingness to make public, for the acceptance of his professional brethren, a recipe which, if it will do what is claimed for it, would be a priceless addition to our present pharmacopœia, and a blessing to the whole human race, is open to two well warranted suspicions. It either is something that will not bear close analysis, or, in other words, is what is contemptuously called a 'quack medicine,' or the discoverer is much more anxious to make money from his own administration of his already well patronized remedy, than he is to benefit his fellow men by making universal what will afford relief to a large and unfortunate class of sufferers. This much is told—that the basis of the new cure is bi-chloride of gold. This already has suggested bi-chloride of nickel as a cure for love! and, possibly, a tendency to gout might be restrained by limiting the gourmand to American tin plates! But while the patients are under the bi-chloride treatment they vigorously abstain from alcohol. It does not seem to have occurred to any of these patients, who are paying roundly for bi-chloride and board, that, by refraining from the use of alcohol, the treatment would be just as effective if the abstinence were accompanied by daily doses of buttermilk."

READ PAGE 525.

JONATHAN'S DAUGHTERS.

MAX O'RELL'S CRITICISM OF THE TYPICAL AMERICAN LADY.

Among the most keenly observant critics of national peculiarities of the present day is M. Paul Blouet, whose amusing volumes on English and American society have been widely read and laughed over. M. Blouet is more familiarly known by his assumed name of "Max O'Rell." He is a Frenchman, with the lively wit and the epigrammatic instinct that are so characteristic of the cultivated men of his race, and he is furthermore a gentleman capable of being witty and satirical without being brutal. He writes in French, having only an imperfect acquaintance with the English language, but his wife who is an English woman of brilliant wit and culture translates his productions and gives them the graceful setting with which we are all familiar. Since M. Blouet's last visit to the United States he has published a book on "Brother Jonathan" and a paper in the *North American Review* (May, 1890), on "The Typical American." In the latter he denied the existence of "typical" American gentlemen, that class being identical in every civilized country, but in the American lady he finds a degree of individuality that surprises himself. On the latter theme he discourses at length in the *Strand Magazine* (London, November, 1891), and we have taken the following extracts from his sketch for the edification of the readers of the AMERICAN ANALYST:

The American lady, in my eyes, is a distinct type; her charms is distinct from the charm of any European lady, and is certainly equal in extent to any. Two traits struck me very forcibly in her, and to the first of these I think she owes a great part of her success. They are, naturalness, or utter absence of affectation, and—shall I say it?—a lurking contempt for man. Not a militant contempt, not a loud contempt, but a quiet, queenly, benevolent contempt. I talked about her owing her success to the first of these; but who shall say whether her triumphant progress has not been greatly due to the second?

I have often tried to explain to myself this gentle contempt of American ladies for their male sex; for, contrasting it with the devotion, the lovely devotion of Jonathan to his womankind, it is a curious enigma. Have I found the solution at last? Does it begin at school? In American schools, boys and girls, from the age of five, follow the same path to learning, and side by side on the same benches. Moreover, the girls prove themselves thoroughly capable of keeping pace with the boys. Is it not possible that the girls, as they watched the performances of the boys in the study, have learnt to say: "Is that all?" while the young lords of creation, as they looked on at what "those girls" can do, have been fain to exclaim: "Who would have thought it?" And does not this explain the two attitudes: the great respect of men for women, and the mild contempt of women for men?

* * * * * *

When I was in New York, and had time to saunter about, I would go up Broadway, and wait until a car, well crammed with people, came along. Then I would jump on board, and stand near the door. Whenever a man wanted to get out, he would say to me, "Please," or "Excuse me," or just touch me lightly to warn me that I stood in his way. But the ladies! Oh, the ladies! Why, it was simply lovely. They would just push me away with the tips of their fingers, and turn up such disgusting and haughty noses! You would have imagined it was a heap of dirty rubbish in their way.

* * * * * *

Just as one of the hardest ways of earning a living is to be a middle-class English wife, so one of the loveliest sinecures in the world is to be an American lady. A small, sometimes no, family to bring up; very often no house to keep; three months' holiday in Europe; a devoted, hardworking husband ever ready to pet her, worship her, and supply the wherewith; an education that enables her to enjoy all the intellectual pleasures of life; a charming naturalness of manner; a freedom from conventionality; a bold picturesqueness of speech; a native brilliancy; all combine to make her a distinct type, and the queen of her sex.

* * * * * *

When a Frenchman and a Frenchwoman converse together, they can seldom forget that one is a man and the other a woman. It does not prove that a Frenchwoman must necessarily be, and is, affected in her relations with men; but it explains why she does not feel, as the American woman does, that a man and a woman can enjoy a *tete-a-tete* free from all those commonplace flatteries, compliments, and platitudes that badly understood gallantry suggests. Many American ladies have made me forget, by the easiness of their manner, and the charm and naturalness of their conversation, that I was speaking with women, and with lovely ones too. This I could never have forgotten in the company of French ladies.

On account of this feeling, and perhaps also of the difference which exists between the education received by a man and that received by a woman in France, the conversation will always be on some light topics, literary, artistic, dramatic, social, or other. Indeed, it would be most unbecoming for a man to start a very serious subject of conversation with a French lady to whom he had just been introduced. He would be taken for a pedant or a man of bad breeding.

In America, men and women receive practically the same education, and this of course enlarges the circle of conversational topics between the sexes. I shall always remember a beautiful American girl, not more than twenty years of age, to whom I was once introduced in a New York drawing-room, as she was giving to a lady sitting next to her a most minute description of the latest bonnet invented in Paris, and who, turning towards me, asked me point blank if I had read M. Ernest Renan's last book, "The History of the People of Israel." Well, I had not. I had to confess that I had not yet had time to read it. But she had, and she gave me, without the remotest touch of affectation or pedantry, a most interesting, detailed, and learned analysis of that remarkable book, almost in one breadth with the description of the Paris bonnet. I related this incident in "Jonathan and his Continent." On reading it, some of my countrymen, critics and others exclaimed: "We imagine the fair American girl wore a pair of gold spectacles."

"No, my dear compatriots, nothing of the sort. No gold spectacles, no guy. It was a beautiful girl, dressed with the most exquisite taste and care, and most charming and womanly."

An American woman, however learned she may be, is a sound politician, and she knows that the best thing she can make of herself is a woman, and she remains a woman. She will always make herself as attractive as she possibly can, not to please men, to please herself. If in a French drawing-room I were to remark to a lady how clever some woman in the room looked, she would probably closely examine that woman's dress to find out what I thought was wrong about it. It would probably be the same in England, but not in America.

A Frenchwoman will seldom be jealous of another woman's cleverness. She will far more readily forgive her this quality than beauty. "Oh! how I should like to be a man!" once exclaimed a French lady in my presence. An American lady would probably have said to her. "My dear, you are ever so much better as you are!"

Of all the ladies I have met, I have no hesitation in declaring that the American ones are the least affected. With them, I repeat it, I feel at ease as I do with no other women in the world.

With whom but an *Americaine* would the following little scene have been possible?

It was on a Friday afternoon in Boston, the reception-day of Mrs. X., an old friend of my wife and myself. I thought I would call upon her early in the afternoon, before the crowd of visitors had begun to arrive. I went to her house at half-past three. Mrs. X. received me in the drawing-room, and we soon were talking on the one hundred and one topics that old friends have on their tongue tips. Presently the conversation fell on love and lovers. Mrs. X. drew her chair up a little nearer to the fire, put the toes of her little slippers on the fender-stool, and with a charmingly confidential, but perfectly natural, manner, said:

"You are married, and love your wife; I am married, and love my husband; we are both artists, let's have our say out."

And we proceeded to have our say out.

But, lo! all at once I noticed about half an inch of the seam of her black silk bodice was unsewn. We men, when we see a lady with something awry in her toilette, how often do we long to say to her: "Excuse me, Madam, but perhaps you don't know that you have a hairpin sticking out two inches just behind your ear," or, "Pardon me, Miss, I'm a married man, there is something wrong just under your waist belt."

But we dare not say so. We are afraid we shall be told to mind our own business.

Now, I felt for Mrs. X., who was just going to receive a crowd of callers, with a little rent in one of her bodice seams, and tried to persuade myself to be brave, and tell her of it. Yet I hesitated. People take things so differently. The conversation went on unflaggingly. More than once I had started a little cough, and was on the point of—but my courage failed. The clock struck half-past four. I could not stand it any longer.

"Mrs. X," said I, all in a breath, "you are married, and love your husband; I am married, and love my wife; we are both artists; there is a little bit of seam come unsewn just there by your left arm, run and get it sewn up!'

The peals of laughter that I heard going on upstairs while the damage was being repaired, proved to me that there was no resentment to be feared; but, on the contrary, that I had earned the gratitude of Mrs. X.

* * * * * *

Inquisitiveness, I have said, is a characteristic feature of American men; but I imagine that this feature is also to be found in the daughters of the Great Republic.

During my second visit to the States, it amused me to notice that the Americans to whom I had the pleasure of being introduced, refrained from asking me what I thought of America, but they invariably inquired if the impressions of my first visit were confirmed.

One afternoon, at an "At Home" in Boston, I met a lady from New York who asked me a most extraordinary question.

"I have read 'Jonathan and his Continent,'" she said to me. "I suppose that is a book of impressions written for publication. But now, tell me *en confidence*, what do you think of us?"

"Is there anything in that book," I replied, which can make you suppose that it is not the faithful expression of what I think of America and the Americans?"

"Well," she said, "it is so complimentary, taken altogether, that I must confess I had a lurking suspicion of your having purposely flattered us, and indulged our national weakness for hearing ourselves

praised, so as to make sure of a warm reception for your book."

"No doubt," I ventured, "by writing a flattering book on any country, you would greatly increase your chance of a large sale in that country; but, on the other hand, you may write an abusive book on any country, and score a great success among that nation's neighbors. For my part, I have always gone my own quiet way, philosophizing rather than opiniating, and when I write, it is not with the aim of pleasing any particular public. I note down what I see, say what I think, and people may read me or not, just as they please. But I think I may boast, however, that my pen is never bitter, and I do not care to criticise unless I feel a certain amount of sympathy with the subject of my criticism. If I felt that I must honestly say hard things of people, I would abstain altogether."

"Now," said my fair questioner, "how is it that you have so little to say about our Fifth Avenue folks? Is it because you have seen very little of them, or is it because you could only have said hard things of them?"

"On the contrary," I replied, "I saw a good deal of them, but what I saw showed me that to describe them would be only to describe polite society, as it exists in London and elsewhere. Society gossip is not in my line, boudoir and club smoking-room scandal has no charm for me. Fifth Avenue resembles too much Mayfair and Belgravia to make criticism of it worth attempting."

I knew this answer would have the effect of putting me into the lady's good graces at once, and I was not disappointed. She accorded to me her sweetest smile, as I bowed to her, to go and be introduced to another lady by the mistress of the house.

The next lady was a Bostonian. I had to explain to her why I had not spoken of Beacon Street people, using the same argument as in the case of Fifth Avenue society, and with the same success.

* * * * * *

At the same "At Home," I had the pleasure of meeting Mrs. Blank, whom I had met many times in London and Paris.

She is one of the crowd of pretty and clever women whom America sends to brighten up European society, and who reappear both in London and Paris with the regularity of the swallows. You meet them everywhere, and conclude that they must be married, since they are styled Mrs., and not Miss. But whether they are wives, widows, or *divorcees*, you rarely think of inquiring, and you may enjoy their acquaintance, and even their friendship, for years, without knowing whether they have a living lord or not.

Mrs. Blank, as I say, is a most fascinating specimen of America's daughters, and that day in Boston I found that Mr. Blank was also very much alive, but the companions of his joys and sorrows were the telephone and the ticker; in fact, it is, thanks to his devotion, to these that the wife of his bosom is able to adorn European society during every recurring season.

American women have such love for independence and freedom that their visits to Europe could not arouse suspicion, even in the most malicious. But, nevertheless, I was glad to have heard of Mr. Blank, because it is comfortable to have one's mind at rest on these subjects. Up to now, whenever I had been asked, as sometimes happened, though seldom: "Who is Mr. Blank, and where is he?" I had always answered: "Last puzzle out!"

The freedom enjoyed by American women has enabled them to mould themselves in their own fashion. They do not copy any other women, they are original. I can recognize an American woman without hearing her speak. You have only to see her enter a room or car, and you know her for Jonathan's daughter. Married or unmarried, her air is full of assurance, of a self-possession that never fails her. And when she looks at you, or talks to you, her eyes express the same calm consciousness of her worth.

Would you have a fair illustration of the respective positions of women in France, in England, and in America?

Go to a hotel, and watch the arrival of couples in the dining-rooms.

Now, don't go to the Louvre, the Grand Hotel, or the Bristol, in Paris. Don't go to Claridge's, the Savoy, the Victoria, or the Metropole, in London. Don't go to Delmonico's, in New York, or the Thorndyke, in Boston, because in all these hotels you will probably run the risk of seeing all behave alike. Go elsewhere, and, I say, watch.

In France you will see Monsieur and Madame arrive together, walk abreast towards the table assigned to them, very often arm-in-arm, talking and smiling at each other—though married. Equal footing.

In England you will see John Bull leading the way. He does not like to be seen eating in public, and thinks it very hard that he should not have the dining-room all to himself. So he enters, with his hands in his pockets, looking askance at everybody right and left. Then, meek and demure, with her eyes cast down, follows Mrs. John Bull.

But in America! Oh, in America, behold the dignified, nay, the majestic entry of Mrs. Jonathan—a perfect queen going towards her throne, bestowing a glance on her subjects right and left—and Jonathan behind!

They say in France that Paris is the paradise of women. If so, there is a more blissful place than paradise; there is another word to invent to give an idea of the social position enjoyed by American ladies.

If I had to be born again, and I might choose my sex and my birthplace, I would shout at the top of my voice:

"Oh, make me an American woman!"

HAIRSPRINGS.

SOME PRACTICAL VIEWS ON THE MAKING OF WATCH SPRINGS.

There is not one watchmaker in a hundred who can fit a hairspring properly, and not one in fifty who knows a correct one when he sees it, says a writer in an eastern paper. The above sentiment expressed by a recognized authority—though, no doubt, too sweeping, still indicates such a lack of information as to furnish plenty of excuse for an essay on the hairspring—the soul of the watch, which has been the subject of the study of the philosopher and experiment of the mechanic, as well as the theme of the essayist, ever since the days of Dr. Hooke. Restricted, as this essay must be, it cannot be expected to be an exhaustive treatise on such a subject as this; but should, at least, contain the greatest possible "pith and point," hence the author will try to suggest the essentials in an essay of convenient length, believing the intelligent and painstaking workman can elaborate on the same, and probably be more benefited than by the tedious perusal of a longer article, burdened with intricate causes and effects, fine spun articles, theories and difficult calculations. Hairsprings are generally made of steel, either left soft or hardened and tempered; the latter should always be used in preference to the former, as being so much superior; the difference in cost should not be allowed to count. Springs have also been made of gold and other non-magnetic material. Steel springs are easily and cheaply produced, but are liable to rust, especially the soft ones, which also cannot be depended upon to retain their shape or elasticity well; even hardened and tempered steel springs are known to change somewhat from long use, and both are subject to magnetic influence. Gold is, of coure, non-magnetic, does not rust and may be made quite elastic, but is too heavy. Some other "non-magnetic" hairsprings, which will not corrode, are coming into use, and though regarded by some as only a caprice of the moment, may shortly demand a conspicuous place in all well-regulated material cabinets. The making of springs from the raw material may be passed over in silence, as there is no excuse for the watchmaker of to-day attempting it. Though new hairsprngs are but seldom required, as compared with mainsprings and other repairs, yet on account of the extreme exactness required, it is necessary to be prepared with just the right thing, as depending on the material dealer at the last moment is apt to result in using something about right, or which can be made to do, but will be found invariably disappointing in the end; hence it will pay to keep a complete assortment of various strengths and diameters, properly assorted, in order to save time and do correct work. Springs made of wire, rather wide than thick, are to be preferred, they being the most elastic; and whether of steel or other material, they should at least be as hard as will safely bear forming in terminal curves without breaking. In the absence of a Bottom's or other gauge for selecting or assorting hairsprings, an old small-size, composition hunting-case watch may be converted into a serviceable gauge by removing the acting parts and fitting an arbor in the centre holes, with reduced bearings to lesson friction, then to this arbor, between the plates, attach, as usual, by a collet, one of the strongest American hairsprings, somewhat shortened to further strengthen it, and having its outer fixed to a stud in the plate. Immediately above the dial, on the large pivot of the arbor, is fixed a hand or index pointing to zero on the dial; and still above the hand, on the arbor pivot, is placed a device, by screw, slot, or otherwise, for holding the spring to be gauged by its outer end; the outer being held in an adjustable stud or clamp, contrived to be given a complete turn—sliding in the glass bezel—around the arbor as its centre; it will be seen that a full turn of this spring may thus be opposed to the first spring which, being, of course, the stronger, its excess of power is shown by the degree on the dial now indicated by the hand; and so the comparative strength of springs can be easily determined; the sixty minute marks of the dial serving as degree marks. The above gauge is suggested as being, perhaps, the most inexpensive and simple possible; unless the outer end of the spring to be gauged to be merely held in tweezers, instead of a stud, as above, while the gauge is rotated, and exact turn, and the degree noted as before.—*Western Jeweler.*

TRUE ENOUGH.—Angry customer—"You told me you would have those trousers of mine to-day." Tailor—"Quite right, sir, I have them."—*Clothier and Furnisher.*

EGG POULTICE.—The skin of a boiled egg is the best remedy for a boil. Carefully peel it, wet, and apply to the boil; it draws out the matter and relieves soreness.

TO CLEAN STEEL.—For a good solution for removing the blue from steel, so as to leave as clean as before coloring, try acetic acid, or solution of chloride of tin (stannous chloride).

LOBSTER LORE.—In buying cooked lobsters remember that a lobster that was alive when thrown into the boiler will have the tail curled up to the body, while one that was dead has the tail extended.

INK BLOTTER.—A blotter can be made that will remove ink spots from paper. Take a thick blotting paper and steep it several times in a solution of oxalic acid or oxalate of potassium. While the ink spot is still moist apply the prepared blotter, and the ink will be entirely removed.

GERMAN BREAD.—A cable despatch from Berlin, October 18, says: Experiments for the production of cheap bread, made necessary by the prevailing high prices, are increasing. Corn, barley, oats, buckwheat, peas, beans and potatoes have been tried, discarded and retried several times. Acorns were last tested, and it was thought for a time that they might answer the purpose, but they have been discarded. The only hope at the present moment seems to lie in corn.

BRIGHT STORIES.

A VERY PECULIAR CASE.

At the time it happened—thirty years ago—I was a bachelor, living in a drawing-room communicating by folding doors with the bedroom behind it, not a hundred miles from the Regent Circus. None of the furniture was my own save one or two easy chairs, a writing-table, and a rather shabby, dilapidated old bureau or escritoire—a relic of my grandfather's, I believe, and preserved by me as representing pretty nearly all the property I ever inherited. It stood in the darkest corner of the sitting-room, though near one of the two long French windows. I seldom went to it, using its numerous drawers, pigeon-holes, etc., only as receptacles for old receipts, bills, papers, and a few odd accumulations of no value, which, for some reasons I did not wish to destroy. The key to its circular top I had, with reprehensible carelessness in such matters, mislaid for weeks. This gave me no concern. I could look for it when I wanted it—that was enough. Other lodgers were in the house, which was kept by a retired butler and his wife, who, with three servants, attended on the inmates.

A young man's life in London, without his being the least unsteady, frequently involves him in late hours when he has a large circle of acquaintances. It was so with me, especially during one particular season. Operas, theatres, suppers, and dances crowded so thick and fast upon each other that, for nights together, I never had more than three or four hours in bed—always having to be up early. Then, by degrees, when I could turn in in reasonable time, I could not sleep, and on this account even the thought of a long night in bed gradually became a terror to me. The fact is, my nervous system was becoming thoroughly unstrung, though at that time I did not know what that meant. Certainly I never thought of it as an illness, and equally certain, would have scouted any idea of seeking advice about it.

In addition, another thing was worrying me greatly. For the past month or more I felt convinced I was being robbed. I did not possess much jewelry, but I was constantly missing certain little trinkets and small articles; among others a silver match box, a large crocodile leather gold mounted cigar case, a pair of gold sleeve links, a small locket, containing some of my mother's and father's hair, a set of studs, a pearl breast-pin, and the like; also a pocket letter or card case, which I well knew contained two £1 Scotch bank notes—unusual money, not easily forgotten. I felt sure that with every allowance for careless habits these and many another similar object had vanished in the most unaccountable way. Search high and low as I would, they were not to be found anywhere in my rooms.

I had lived there nearly two years when this vexation began, and I knew not whom to suspect. It was horribly awkward and most unpleasant. The landlord and his wife bore unimpeachable characters, and I could never have looked either of them in the face again had I breathed the faintest suspicion of their honesty. Three other men, two of whom I knew slightly, were lodging in the house, as I have said, but as to suspecting them of this petty larceny, the idea was out of the question. No, it must be one of the servants—but which? One of the three was a lad of sixteen. He was a newcomer, truly. The two women were in the house when I took up my quarters there—respectable "elderly parties."

I did not know what to do for the best. To lock up the rooms was impossible, and even to do the same with all my drawers, writing-table, wardrobe, etc., now, after never having previously turned a key on anything, would be at once to cast a slur on the establishment. Besides, I never could tell exactly when I missed this or that article, because, as I repeat, my careless ways had often led me to imagine that I had lost a thing when I merely mislaid it.

Presently the idea occurred to me that I would set a trap. I left a small sovereign purse in a corner drawer of the dressing-table, whence I could declare many trinkets and valuables had been purloined; but there it remained. I shifted it, partially covered it with other things, as if by accident, or as if it had been forgotten; yet it was always forthcoming whenever I looked. I put a solitary sovereign on a corner of the mantlepiece; the housemaid twice drew my attention to the fact that the coin was still lying there. No, nothing that I ever placed as a bait disappeared. The depredations were confined to such objects as I hadn't been thinking about until I wanted them.

The month was August, the nights hot and sultry, and less than ever conducive to sleep. I had nothing to do that evening, and, although I turned in early, it was with the usual result. The clock had just struck one, and I had been in bed since eleven o'clock without closing my eyes. It was the old story; I was accustomed to it. Suddenly, amid the host of perplexing and even awe-inspiring thoughts whirling through one's brain under these conditions, I remembered that pocket letter containing the two £1 Scotch bank notes. Where was it? I had not seen it for weeks. After restlessly striving to drive away the desire to get up and get it, it mastered me, and out of bed I sprang. For fully an hour I carried on the quest, but all in vain. Every conceivable corner, drawer and pocket was ransacked. The key of the escritore had been mislaid, so I could not examine that; but I knew it contained little or no papers.

At length, entirely exhausted, irritated and fevered, and with the chamber candle expiring with a splutter, I flung myself on a couch in the drawing-room. Dawn had not yet broken, but in a few minutes, as I lay there coiled up in my dressing gown, I unexpectedly fell asleep—a restless, dreaming sleep, full of fantastic, weird-like indescribable shapes.

When I awoke it was daylight, though the room was still shadowy and obscure, save in one spot close to the long window, where the Venetian blind was partly raised—the window nearest that dark corner occupied by the old escritoire. The head of the couch was toward the mantel-piece, but almost facing the door from the landing on the further side of the wall.

At the moment I opened my eyes with a feeling of relief at having just escaped some visionary peril, to my amazement I saw that door slowly open and the figure of a man stealthily entering it. It did not make the faintest noise on its hinges, nor did he with his footsteps—not so much as the creaking of a plank. The light in that part of the room was far too dim to allow of my seeing what he was like. His face was slightly averted also, and, except that the general looks of the man seemed to be not altogether unfamiliar, I could not in the least tell who he was. The first impulse, of course, was to sit up and call out, but for some inexplicable reason I restrained it—perhaps because the thought instantly crossed my mind that here was the thief, and upon that I suppose I rapidly concluded to watch him, and pretended to be still sleeping.

However this may be, I did not move as I observed him creep noiselessly across the room to the end of the mantel-piece farthest from that where I was lying. He appeared not to notice me, and, after feeling for a moment between the edge of the looking glass and the wall by the mantel-shelf, he took something away, and instantly crossed back to the window by the escritoire. He passed the little gap of light so quickly into the dark corner that I still failed to recognize him. Then I could dimly make out that he was apparently unlocking the lumbering piece of old furniture, though still without making the slightest sound.

"Ho! ho?" thought I, "my fine fellow, now I've caught you, have I? You have found the key, and are going to exercise your calling in that direction, eh? Well, there's not much that's worth your attention there; you won't find that a profitable hunting ground!"

I was not long, you may depend, in coming to a determination. While he was still fumbling at the escritoire I rose, and, stealing softly up behind him, suddenly seized him by the back of his collar. He endeavored to writhe out of my grasp, but I turned him around so quickly that we both staggered and fell on the floor in a huddled heap together—he undermost. In the fall I struck my forehead severely against something, probably a projecting chair. For the moment the blow seemed to blind me; but as we had rolled over into the gap of light from the window I caught sight of his face, turned up as it was toward mine, and I saw—whose face, think you? Why, no other than my own—yes, my very own, as I well knew it in the looking-glass.

That one instant of amazement and consternation in which, as by a flash, I made this recognition, was followed by a total oblivion of all surroundings. The face and figure seemed to fade away beneath me and to vanish with my consciousness.

How long I lay prostrate, face downward on the floor, I know not; but in that position I found myself when my bewildered senses slowly returned. For awhile, of course, I could remember nothing—how I came there or what had brought me to such a pass. Only very slowly did the circumstances recall themselves. What on earth did they mean? My forehead was unmistakably cut and still bleeding; indeed, there was a patch of congealed blood on the carpet plainly visible in the broad flood of early sunlight now streaming in beneath the half-raised blind. Had I been dreaming? More likely I had had a fit; anyhow, I was so utterly bewildered that it was some time before my thoughts became coherent. Then alarmed and fully conscious for the first time in my life that I must be seriously ill or laboring under some mysterious mental aberration, I rose from the floor and sat down in an adjacent chair.

As my eyes wandered vacantly around they fell upon the circular top of the old escritoire. It was practically open. Some one had been at it, then; that was clear. That was no dream, no fancy—scarcely due to a fit, one would think—at least, not of the sort I had tremblingly thought of. Yes, and there was the missing key in the lock. When these facts had been fully broken in upon my cob-webbed brain, they led to but one idea. Acting upon it, I pushed the lid full open, and with the rapidity of thought pulled out one drawer after another, and there, in most of them, were deposited a lot of the articles and objects I had so long missed—there, in this neglected, useless piece of old furniture? I turned them all out in a confusion worse confounded than my thoughts. But there they were—almost every one; cigar case, silver match box, trinkets, locket and pocketbook containing the Scotch bank notes.

Then, how on earth had they come to be in this place? A thief would hardly have stolen them to conceal them thus in my own apartments, unless—unless—and then, very reluctantly, slowly, and at first but vaguely, did I arrive at the conclusion—unless the thief was myself!

Verily, this was an alarming supposition, and confirmed my worst dread. I must be suffering under some frightful, inexplicable brain disease, for that I had done this thing I was wholly and totally unconscious.

For days and days, however I took no action. I hesitated to breathe a word of the extraordinary affair to a soul. Who would believe it? Everybody would say I had gone out of my mind—I thought so myself. I doubted if any doctor would accept as veracious this wild account of my dread awakening to the truth. Yet, as I knew it to be truth, I set this record of it down while it was all fresh in my memory, and eventually, being unable any longer to bear the horrible suspense

and perplexity in which the strange experience had left me, I put it before a medical friend.

To my unspeakable astonishment, he believed every word of it. Then, after answering his endless, searching questions, and when he had listened to such verbal additions to the narrative as I could give him, he did not doubt one single point.

"Yes," he said, "among other complications, you probably have been walking in your sleep and yourself secreting the various articles from time to time. The key, to wit, of the escritoire, which you imagine to have been the object taken from behind the looking-glass, by the figure you fancy you saw, had been placed there by your own hand. Your brain retained some dim perception of your having done so, and the disordered condition of your nervous system accounts for that perception assuming the shape of a figure resembling yourself, and in a state of partial unconsciousness you dashed upon your imaginary burglar—your own ghost, in fact—fell and fully restored your senses to their equilibrium by that rap on your head. However, it is enough for you if I tell you that your nervous system is wholly broken down, and that if you don't take a long holiday, go into the country, and for the next three or four months lead a perfectly regular, quiet life, I won't answer for the consequences. No, I shall give you very little medicine. Fresh air, quiet, and regularity are the only drugs you stand in need of."

His advice was followed to the letter, for I was thoroughly frightened. Thirty years have passed; I have long been married, and I have never missed a single piece of property, large or small, since that extraordinary August night.—*All-the-Year-Round.*

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

October.

MEATS.—Beef, mutton, ham, kidneys, liver, venison, sausage.

GAME AND POULTRY.—Pigeon, chicken, duck, woodcock, brant, grouse, partridge, rabbit, snipe, goose.

FISH.—Bass, blackfish, bluefish, clams, cod, crabs, eels, carp, catfish, flounder, halibut, herrings, lobster, mackerel, mussels, oysters, pike, porgie, prawn, rockfish, salmon, sea bass, sturgeon, smelt, turtle, white fish, whiting.

VEGETABLES.—Artichokes, beets, beans, broccoli Brussels sprouts, cabbage, carrots, cauliflower, corn, cucumbers, egg-plant, garlic, lettuce, onions, parsley, parsnips, potatoes, radishes, rhubarb, savoy, shallots, spinach, squash, tomatoes, turnips, watercress.

FRUITS.—Apples, bananas, blackberries, grapes, melons, oranges, peaches, pears, pineapples.

PRACTICAL RECIPES.

SPANISH STEW.—This is an excellent way to use up tough cold beef. Take two or three pounds of cold meat and cut it into small pieces, put it in a stew pan with a can of tomatoes, two good-sized onions cut in quarters and five or six sticks of maccaroni broken into small pieces. Cover the stewpan and cook until the meat is reduced to shreds, which will be for three or four hours. If the gravy boils away add boiling water enough to make it the required thickness; season highly before serving.

BOILED HALIBUT.—Take a piece of halibut weighing four pounds. Put it into the fish-kettle with the back of the fish undermost, cover it with cold water, in which a handful of salt has been dissolved. When it begins to boil, skim it carefully, and then let it just simmer till it is done. It will require nearly thirty minutes, to boil it. Drain it, garnish with horse-radish; egg sauce or plain melted butter, are served with it.

LARDED SCALLOPS.—Cut some fatty bacon into thin strips and draw a piece crosswise through each scallop, dip them then in egg and cracker dust and fry brown in very hot lard.

BACON TOAST.—Cut some thin slices of bread, about two or three inches long, and some streaked bacon in small pieces, dip them into a raw egg beaten up with shred parsley, green onions, shallots, and pepper; fry over a slow fire, and serve with clear sauce and a little vinegar in it.

GELATINE BLANC MANGE.—Put one-quarter box of gelatine to soak in a little milk for an hour, then add one-half cup of boiling milk and stir until thoroughly dissolved; add enough of sugar to make it very sweet, and flavor with vanilla. Whip stiff two teacupfuls of sweet cream. Whip the hot gelatine until it is cold and begins to thicken, then beat in the whipped cream, pour into a mold and set away to stiffen. Serve with cream.

STUFFED POTATOES.—Select large fine potatoes and bake them thoroughly. Cut them in halves, lengthwise and scoop out the insides. Season the potato with pepper and salt, and mix with it some cold cooked sausage chopped fine. Fill up the cases, brush with beaten egg and brown in the oven. Serve on a napkin.

PICKLED CABBAGE.—Take two nice white cabbages and cut them in quarters; put them in salted water for twenty-four hours, then boil them tender in weak vinegar with a little tumeric in it, put them in jars, pour cold vinegar over them, tie up and set away.

PHANTOM PARTIES.

REVIVAL OF AN OLD-FASHIONED SOCIAL AMUSEMENT.

The old "phantom party" idea, renovated by the witchery of a "web of fate," is with us again. The phantom costume consists, as every one knows, of a large enveloping sheet, a pillow case with apertures for the eyes, or a mask shrouded with a pillow case, about the head. Costumed in this ghostly attire the hostess receives her guests in silence. She greets them without words and motions them to the toilet rooms, from which they emerge clad in the white disguise. Each phantom guest receives on entering the parlor a single bright thread of the "web of fate." This thread is of the bright-colored twine now to be purchased in the shops, and is about twenty yards in length. It is suspended from some conspicuous place over the chandelier, the doorway, or a picture, and thence pursues its intricate and winding way over doorways, behind bookcases, up stairways and down again, even out-of-doors and into kitchens, until finally, in some secret place, it is tied about the hidden "fate."

These "fates" are written upon rolls of paper, and set forth the destiny of the person for whom each is prepared. On the cleverness of the hostess in writing prophecies in accordance with the whims and hobbies of each guest, as well as the humor and wit desirable in the composition, depends the success of the entertainment. Quotations are also made to do duty in this capacity when originality and ingenuity are lacking. Each of the strings in the net must be of a decided tint contrasting with all the others as they cross and recross many times in the disentangling. They must also be of the same length, as a prize is given to the phantom who first discovers the roll of fate. The quest is pursued in silence, which is broken only when the fates are all found and read aloud to the assembly. Then there are unmasking and hilarity galore.—*Sun.*

LENSES.

HOW SPECTACLE GLASSES ARE GROUND.

The art of making spectacles, says the *Popular Science Monthly*, has been reduced to a science. The bit of glass to be formed into a lens is fastened by means of pitch to a small block of hard rubber so that it may be more readily handled. It is ground by being pressed against a rapidly revolving metal tool, whose curvature is equal and opposite to that desired in the lens. This is known as the "rough tool" and is made of cast iron. It is mounted on a verticle spindle, and is kept moistened with emery and water. Several grades of emery are used in succession, changing from coarse to fine as the grinding proceeds. As a result of this process the glass has a rough surface and is no longer transparent. It is now transferred to the "fine tool." This is made of brass and has its surface as true as possible. It is compared from time to time with a standard curve in order to insure accuracy. In this second grinding the abrading materials is rouge (carefully calcined sulphate of iron). Finally the lens is polished by being pressed against a piece of cloth powdered with rouge and fastened with the rotating tool. The glass is now loosened from its block, turned over, and the reverse side of the lens is ground. When this has been accomplished the lens must be cut down to the proper shape for mounting in the spectacle frame. It is placed on a leather cushion and held firmly in position by a rubber-tipped arm while a diamond glass-cutter passing around an oval guide traces a similar oval on the glass below. The superfluous glass outside the oval is removed by steel pincers, the rough edges are ground smooth on Scotch wheels and the lens is ready for mounting. The glasses for small telescopes, microscopes, burning glasses and the like are ground in the same fashion.

SPONGES.

VARIED FORMS FOUND IN THE DEPTHS OF THE OCEAN.

Some of the most beautiful things that live in the ocean are the sponges of the great depth, which have often very curious and interesting forms. Not least remarkable are the so-called "sea nests," which are in the form of spheres or sometimes egg-shaped. The outer coat of one of these specimens is a complicated net work, over which a delicate membrane is spread. An ornamental frill adorns the upper part, while the lower portion throws out a maze of glossy filaments like fine white hairs. These hairs penetrate the semi-fluid mud in every direction, thus holding the sponge in its place, while a continuous current of water is drawn by waving "cilia" through all parts of the mass, passing out by a hole at the top. In this manner the animal absorbs whatever food may be afloat. Another singular sponge is the "glass rope," which sends down into the mud a coiled wisp of filaments as thick as a knitting needle. The latter opens out into a brush fixing the creature in place after the manner of a screw pile. Still another remarkable sponge is found in the deep water off the Loffoden Islands. It spreads out into a thin circular cake, surrounded by what looks like a fringe of white floss silk. Yet another curiosity is the "eupectella" sponge of the Philippines, which lives embedded to its lid in the mud and supported by a lovely frill.

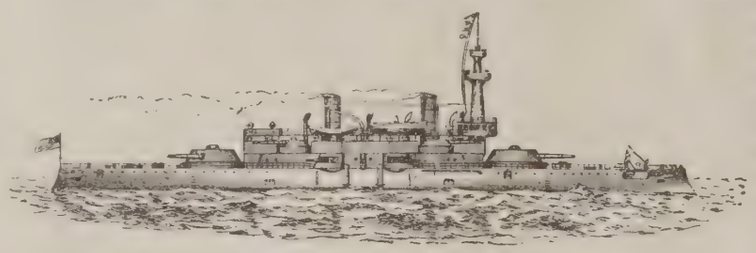
PRIMITIVE COMFORTS.—In the year 1200, chimneys were scarcely known in England. Only one was allowed in a religious house, one in a manor house, and one in the great hall of a castle or lord's house; but in other houses the smoke found its way out as it could.

Subscription $1.00 per year. Now is the time to subscribe.

THE COLUMBIAN EXPOSITION.

THE PROPOSED MACHINERY HALL AT THE CHICAGO EXPOSITION.

We continue our description of the preparations progressing in Chicago for the grand International Exposition of 1893. One of its conspicuous features will be the Machinery Hall, upon which work has recently been begun. On the lower part of this page will be found an illustration of the splended structure The main machinery building measures 850 by 500 feet. It is spanned by three arched trusses, and the interior will present the appearance of three railroad train houses, side by side, surrounded on all the four sides by a 50-foot gallery. The trusses are to be built separately, and so that they can be taken down and sold for use as railroad train houses, and it is hoped to have iron trusses instead of cheaper ones which may, however, be necessary. In each of these three long naves there is to be an elevated traveling crane, running from end to end of the building. These will be useful in moving machinery, and when the Exposition opens, platforms will be placed on them, and visitors will view from these the entire exhibition at a great saving of tramping. Shafting for power will be carried on the same posts which support these traveling bridges. Steam power will be used throughout this main building, and this steam will be supplied from a main power house adjoining the south side of the building. The exterior towards the stock exhibit and the railroad is to be of the plainest description. On the two sides adjoining the grand court, the exterior will, however, be rich and palatial. All the buildings on this grand plazza are designed with a view to making an effective background for displays of every kind, and in order to conform to the general richness of the court, are enriched with colonnades and other architectural features. The design follows classical models throughout, the detail being borrowed from the Rennaisance of Seville and other Spanish towns as being appropriate to a Columbian celebration. As in all the other buildings on the court, an arcade on the first story permits passage around the building under cover; and as in all the other buildings the fronts will be formed of "staff," colored to an ivory tone. The ceilings of the porticoes will be emphasized with strong color. A colonnade with a café at either end forms the connecting link between Machinery and Agricultural halls and in the center of this colonnade is an archway leading to the exhibits. From this portico there will be a view nearly a mile in length down the lagoon, and an obelisk and fountain placed in the lagoon between the two buildings, Agriculture and Machinery, will form a fitting point to this vista. The machinery annex will be placed in the rear of the Administration building. It will be entered by tunnels or subways, as well as by bridges, from Machinery Hall, and the buildings for Administration, Mines and Transportation. It is to be very large but very simple building. While in the main Machinery building a railroad train house is the type, in the annex a mill or foundry will be considered the model for construction. It is all to be built of wood and in the most economical manner. The building will have a nave 100 feet wide, with a 50-foot wide leanto in one story on the inside, and a 50-foot wide leanto on the outside. Within the inner circle will be a park in which visitors fatigued by the hum of machinery may rest. The power will be transmitted by shafting crossing the building at each bay, with a moter at each shaft. The electrical power will be used in the annex, and the steam power in the main Machinery building. Attached to this great annex will be the power house, convenient to the tracks for coal supply, etc., containing an immense display of boilers, while in the adjoining portion of the annex building will be established the enormous plant of engines and dynamos. This will probably be the largest and most interesting display of electric power ever made, and will be one of the principle features of the Exposition. It is possible that gas will be used instead of coal for fuel beneath the boilers, and in that case a building will be prepared for making this gas.



UNITED STATES COAST LINE BATTLE SHIP.



MACHINERY HALL, NOW BEING ERECTED FOR THE COLUMBIAN EXPOSITION.

WORLD'S FAIR NOTES.

More than 15,000,000 feet of lumber will be used in the construction of the huge building for Manufacturers and Liberal Arts.

The foreign commissioners—Sir Henry Wood and James Dredge of England, Herr Wermuth of Germany and Dr. Emil Meyer of Denmark,—are greatly impressed and pleased at the building plans and extensive preparations for the Exposition. Said Mr. Dredge: "I have examined the plans very carefully. They contemplate the erection of magnificent buildings. They are bold, striking and, I may say, far in advance of our anticipations. From an architectural point of view I do not believe they could be improved. And I am assured that the landscape effects will be in harmony with the architectural features. Mr. Olmstead is the greatest landscape engineer in the world. The work he has done for the World's Fair shows that."

A reproduction of Independence Hall is now proposed as Pennsylvania's building at the Exposition. Prizes of $1,000, $500 and $300 have been offered for the best plans for a State building but it is thought the State commission will seriously consider rejecting them all and reproducing Independence Hall instead.

The Association of Civil Engineers of the City of Mexico has voted unanimously to attend the Exposition in a body.

American jewelers are contemplating the project of massing their exhibits at the Exposition, believing that a more effective showing can be made in that manner. The matter is not yet decided. Foreign jewelers are preparing to make an exhibit of unprecedented extent and value.

A Turkish flag was hoisted at the World's Fair ground on Sept. 20th with appropriate ceremonies. It was raised on the site which Robert Levy, of Constantinople, has secured for his Turkish specialties. He will reproduce a Constantinople street, show most of the striking features of Turkish life and have a novel and interesting collection of Turkish goods and curios. The flag was raised in conjunction with the stars and stripes and is the first one of the scores of foreign flags eventually to enliven Exposition scenes.

AN ARIZONA LIZARD.

A GILA MONSTER IN WASHINGTON.

Writing from Washington City the brilliant correspondent, René Bache, says: A Gila monster has been placed on exhibition within the last few days at the National Zoological Park. "*Heloderma Suspectum*" the label reads on the glass-covered box in which it is confined. Its last name will suggest to visitors the impudence of toying with the animal. Its breath, deemed so fatally poisonous, has not thus far done damage to any of a score of persons who have accepted invitations to take a whiff off it. A foot and a half in length it measures, and it looks exactly as if it were made of light salmon-colored beads with a pattern in black beads worked in When eating, it sticks out its big black forked tongue and licks each morsel well before taking it into its mouth and swallowing it. The scientific men here in Washington entertain widely differing opinions as to the poisonous character of this celebrated reptile's bite. Dr. R. W. Shufeldt believes that it is venomous. He speaks from experience with a Gila monster that was sent to the Smithsonian Institution from Arizona a while ago. "I had taken the animal out of the box for the purpose of examining it," he says, "and was in the act of putting it back when my grasp slipped. It made a dart at me, and, seizing my right thumb in its mouth, sank its teeth to the bone, inflicting a severe lacerated wound. It loosed its hold at once. The bleeding soon ceased, but it was followed by shooting pains up the arm and down the same side. So severe were the pains, taken together with the nervous shock, that I fell in a faint. I perspired profusely. My hand swelled very much, but the next morning the swelling was lessened, and the wound soon healed, leaving no scar. After inflicting the bite, the heloderma appeared dull and sluggish, just as a venomous serpent is torpid somewhat after having given a deadly nip. My impression is that the bite of this creature might be fatal under some circumstances." This accords with the theory entertained by Professor B. D. Cope, the greatest living authority on reptiles. Said he: "The *Heloderma suspectum*, to which I gave that name for reasons which seemed to me justified, has four glands containing a salivary secretion, concerning the poisonous nature of which there is dispute. Its teeth are grooved, apparently for the purpose of conveying the secretion made by these glands into the bitten wound. This venomous apparatus, supposing to be properly so designated, was presumably developed in the same manner and through the same causes as produced the poisoning equipment of snakes. In my opinion, the poison glands of serpents are simply modified saliva glands. To those animals, being stepped upon has always been a cause of irritation and misery. On this account, in the course of long ages, their saliva has gradually become poisonous, so as to serve for the purpose of defence, and at length special glands and apparatus rendering their bite harmful have been developed. The same argument may apply to the sluggish and otherwise defenceless Gila monster." Dr. Weir Mitchell, of Philadelphia, has been in Washington during the past few days. He is a believer in the venomous character of the Gila monster, and his opinion is worth something, not only because he is recognized as the greatest authority in this country on snake poisons, but for the reason that he made a series of experiments some time ago for ascertaining the effects produced by the fluid from the heloderma's glands upon rabbits and guinea pigs inoculated with it. A supply of the alleged poison was got by causing the lizard to chew the edge of a saucer. An hypodermic syringe was used to inject it beneath the skin of each of the animals treated, and they all died. It was found that the venom killed by paralyzing the heart, and this was deemed rather curious inasmuch as snakes' poison produces death by paralyzing the breathing organs. The heart of each guinea pig and rabbid ceased to beat soon after the inoculation, and the spinal cord was paralyzed also This method of administering the venom was employed because the deaths might otherwise have been considered to be more or less attributable to the shock and laceration of the bite. Snake poison, dried, will preserve its properties for an indefinite length of time; it would be interesting to know whether or not the venom of the heloderma has the same property. However, Dr. Yarrow, of Washington, has tried experiments with rabbits and guinea pigs by inoculating them with the poison of the Gila monster, without producing any results whatever, and he therefore believes that it is not a venom at all or calculated to be in any way more injurious than ordinary saliva. It is believed the Gila monster lays eggs, but no body knows with certainty. Captain Bendire is sure of it. He has charge of all the eggs at the Smithsonian Institution. A while ago he dissected a heloderma and found eight eggs inside of it. Each of them was three-quarters of an inch long by one-third of an inch in width, bluntly pointed at each end and in shape like the egg of an alligator. They were covered with a smooth, soft white skin, however, instead of with a hard glossy shell, like those of the saurian referred to. It may be that they would have hatched before birth, the young coming into the world alive, as happens with many reptiles; but this did not seem likely.

HOW CUTTING. — "Hullo, Gerty! You've got Fred's hat on and his overcoat." "Yes. Don't you like it?" "Well—It makes you look like a young man, you know, and that's so effeminate!"—*Punch*.

BUFFALO LITHIA WATER

For BRIGHT'S DISEASE OF THE KIDNEYS, THE GOUTY DIATHESIS, Etc.



Dr. WM. A. HAMMOND'S Sanitarium for Treatment of Diseases of Nervous System, 14th Street and Sheridan Avenue, Washington, D. C.

Dr. WM. A. HAMMOND,

WASHINGTON, D. C.,

Surgeon-General U. S. Army (retired), formerly Professor of Diseases of the Mind and Nervous System in the University of New York, etc., says:

"I have for some time made use of the

BUFFALO LITHIA WATER

in cases of affections of the Nervous System, complicated with Bright's Disease of the Kidneys, or with a Gouty Diathesis. The results have been eminently satisfactory. Lithia has for many years been a favorite with me in like cases, but the

BUFFALO LITHIA WATER ACTS BETTER THAN ANY EXTEMPORANEOUS SOLUTION

of the Lithia salts, and is, moreover, better borne by the stomach. I also often prescribe it in those cases of cerebral hyperæmia, resulting from over mental work—in which the condition called nervous dyspepsia exists—and generally with marked benefit."

WATER IN CASES OF ONE DOZEN HALF GALLON BOTTLES, $5.00, F. O. B. HERE.

☞ For sale by all first-class Druggists, and Pamphlet sent to any address.

THOMAS F. COODE, Proprietor, Buffalo Lithia Springs, Va.

☞ Please mention the AMERICAN ANALYST.

GUNS ON A NEW PLAN.—Dr. Gatling, the inventor, has added to his numerous devices an invention by which he expects to revolutionize the manufacture of heavy ordnance, and he has decided to locate in Marion, Ind., a plant for that purpose. The new process includes a composition and a mechanical device. The former he declares to be much greater in tensile strength than any now in use, and to this he proposes to add by a device for coiling the metal about the case and by cooling the gun from the inside. The composition has been tested to the satisfaction of the inventor, and, the process being infinitely more rapid than any now applied, he expects to have the first gun ready for a test in three months.

ORIGINAL. No. 27.

Pompton Puffs.

BY MARION HARLAND.

3 cups of flour, 1 tablespoonful of butter, ½ teaspoonful of salt, 2 cups of milk, 4 eggs whites and yolks beaten separately, 1 heaping teaspoonful of Cleveland's baking powder.

Sift flour, baking powder and salt together twice, chop in the butter. Stir the beaten yolks into the milk and add the flour, then the frothed whites. Whip high and light and bake in cups in a quick oven.

Use only Cleveland's baking powder, the proportions are made for that.

Hot biscuit made with Cleveland's baking powder may be enjoyed even by those of weak digestion. Cleveland's is the anti-dyspeptic leavening agent. The leaven comes from cream of tartar and soda, nothing else; no ammonia or alum.



A Tonic

Horsford's Acid Phospha'e.

A most excellant and agreeable tonic and appetizer. It nourishes and invigorates the tired brain and body, imparts renewed energy and vitality, and enlivens the functions.

Dr. EPHRAIM BATEMAN, Cedarville, N. J., sasy :

"I have used it for several years, not only in my practice, but in my own individual case, and consider it under all circumstances one of the best nerve tonics that we possess. For mental exhaustion or overwork it gives renewed strength and vigor to the entire system."

Descriptive pamphlet free.

Rumford Chemical Works, Providence, R. I.

Beware of Substitutes and Imitations.

CAUTION:—Be sure the word "Horsford's" is on the label. All others are spurious. Never sold in bulk.

The Key to Success



in washing and cleaning is *Pearline*. By doing away with the rubbing, it opens the way to easy work; with *Pearline*, a weekly wash can be done by a weakly woman. It shuts out possible harm and danger; all things washed with *Pearline* last longer than if washed with soap. Everything is done better with it. These form but a small part of the—Why women use millions upon millions of packages of *Pearline* every year. Let *Pearline* do its best and there is no fear of "dirt doing its worst."

Turn the Key

On the peddlers and grocers who tell you "this is as good as," or "the same as" Pearline. IT'S FALSE; besides, Pearline is never peddled.

236 JAMES PYLE, New York.

BUSINESS NOTES.

SURA CURA.

Malaria, in some form or other, is charged with being the cause of most of the ills borne by afflicted humanity, and it is for the cure of malaria, and the diseases arising therefrom, that a leading New York firm, R. W. Robinson & Son, 184 Greenwhich Street, has put upon the market an efficacious and therefore swift-selling preparation. The name of this great antitode for malaria—Sura Cura—most admirably describes its wonderful effects. It is a sure cure for rheumatism and neuralgia, diseases than which there are none more prevalent or painful Sura Cura is sold throughout the entire country for 50 cents and $1, which is half the cost of a single physician's call. But it would be cheap if it cost any multiple of times what a doctor charges for his visits, for there is no price too great to pay for health and few diseases are more difficult to cure than those for which Sura Cura is so admirable a remedy. In common parlance, Mr. Robinson's remedy "gets there every time," as many cured cases of rheumatic and neuralgic troubles will joyfully testify.—*Exchange.*

SAFE TRAVEL.—The Chairman of the National Board of Steam Navigation declared recently that travel on water in a steam craft was the safest in the world, inasmuch as only sixty-five persons were killed last year out of over 500 000,000 who traveled in 3,947 steam vessels.

GAS AND LEATHER.—Mr. Wiesner has published a communication tending to show that the products of combustion of gas have no action on paper and that gas can be used with perfect safety for the illumination of libraries. The chief difficulty, however, does not lie with paper, but with leather—it is the bindings that suffer. Exhaustive experiments upon leathers of various grades would be most valuable to librarians.—*Invention*, London.

COSTLY BENEFITS.—A single page in one issue of the *Century*, taken for advertising purposes, costs $500; in *Harper's*, $400 down to $100. A yearly advertisement in one column of the New York *Herald* costs $30,300 for the lowest, and $310,000 for the highest price column. These figures will doubtless be of interest to men who invest two or three dollars per month, and flatter themselves with the idea that they are extensive and liberal advertisers.

A TALL SCHEME.—M. Eiffel is stated to be supporting a project for the erection of an observatory on the summit of Mont Blanc.

WISE PRECAUTION.—Paris requires every vehicle traversing its streets at night, if only a wheelbarrow, to carry a lighted lamp.

Fine Table Wines

From our Celebrated Orleans Vineyard.

Arpad Haraszthy & Co.

Producers of the

ECLIPSE CHAMPAGNE,

530 Washington St. SAN FRANCISCO.

GENERAL AGENCIES:

NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOSEPH R. PEEBLES' SONS CO., 73 West Fourth Street.
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.

Armour's

Extract of BEEF.

The best and most economical "Stock" for Soups, Etc.

One pound equals forty-five pounds of prime lean Beef.

Send to us for our book of receipts, showing use of **ARMOUR'S EXTRACT** in Soups and Sauces.

ARMOUR & CO., Chicago.

GRANT.

SHERMAN.

SHERIDAN.

McCLELLAN.

GEN. GRANT'S MEMOIRS.

Original $7 Edition for 30 Cents.

NO book, excepting the Bible, has ever had such a sale in the United States as General Grant's Memoirs. 650,000 copies have already gone into the homes of the rich, but the subscription price of $7.00 has placed it beyond the reach of people in moderate circumstances. **If 650,000 people have been willing to pay $7.00 for Grant's Memoirs, there must be a couple of million people in the United States who want them, and will jump at the opportunity** to buy them at the low figure here offered.

We will send you General Grant's Memoirs, publisher's original edition, best paper, cloth, green and gold binding, hitherto sold by subscription at $7.00,

FOR 30 CENTS!—FOR 30 CENTS!—ABSOLUTELY ONLY 30 CENTS!

and absolutely a proposition such as has never been made in the history of book publishing. The two splendid volumes of Grant's Memoirs, of which 650,000 copies have been already sold—not a cheap edition, but the best—for 30 cents; provided you send your subscription of $1.00 to the **AMERICAN ANALYST** one year, and also a subscription of $3.00 for the **COSMOPOLITAN MAGAZINE,** the brightest and cheapest of the great illustrated monthlies, itself equal to the best $4.00 magazine.

The **COSMOPOLITAN** is enabled to make this offer because of **the purchase of 600,000 volumes at a price which even publishers would deem impossible, and with the idea of running up its circulation to half a million copies.** By contract with the **COSMOPOLITAN,** and at no profit to us, we are enabled to offer our readers a share in the low price obtained through the largest purchase of books ever made in the history of the world.

If, however, you have Grant's books, our offer will permit you to take instead,

GEN. SHERMAN'S MEMOIRS, 2 Vols., sold by subscription for $5.00
GEN. SHERIDAN'S MEMOIRS, 2 Vols., sold by subscription for 6.00
GEN. McCLELLAN'S MEMOIRS, sold by subscription for . . 3.75

All of these are bound in cloth, green and gold, in uniform style with Grant's Memoirs.

Send us at once $3.00 for year's subscription to the **COSMOPOLITAN,** $1.00 for year's subscription to the **AMERICAN ANALYST,** and 30 cents for a set of Memoirs—$4.30 in all—to which add postage on the particular set of Memoirs selected.

WHY DO WE MAKE THESE GRAND OFFERS?

Simply because we want every intelligent family to keep well informed as to the popular science of this progressive era. We publish the **only popular journal on this subject—THE AMERICAN ANALYST.** Its subscription list is already very large; but we want at least **Fifty Thousand additional subscribers before January 1, 1892.** We know that, if we shall get them, we shall be able to hold most of them as permanent readers of our periodical. So at present sacrifice and at great cost, we have entered into a combination. The **COSMOPOLITAN** is the brightest and cheapest of the great illustrated monthly magazines; it gives annually 1,536 pages by the ablest writers, and over 1,200 illustrations by the ablest artists; and is just as interesting to the young boy or girl as to the oldest grey head. Now, then, we ask you to send us merely $4.30, and, on receipt of same, we will mail them to you regularly for **one year,** and will also send you (making no charge for the books) a set of **GENERAL GRANT'S MEMOIRS,** or either of the other works that you may select. **NO SUCH OFFER AS THIS WAS EVER MADE BEFORE BY ANY PUBLISHER SINCE TIME BEGAN!**

UNLESS OTHERWISE DIRECTED,

we shall invariably ship the books by express, charges to be paid by the receiver. If you wish the volumes forwarded by mail, you must distinctly say so at the time when you send us your address and the Money; and you must also enclose postage to prepay the packages at the following rates: **GRANT'S MEMOIRS,** 96 ozs., 48c.; **SHERMAN'S MEMOIRS,** 92 ozs., 46c.; **SHERIDAN'S MEMOIRS,** 84 ozs., 42c.; **McCLELLAN'S MEMOIRS,** 48 ozs, 24c. The government rate for postage on books is one-half cent per ounce. The **COSMOPOLITAN** and **AMERICAN ANALYST** are sent to subscribers free of postage.

SEND ALL ORDERS ADDRESSED

THE ANALYST PUBLISHING CO.,

19 Park Place, New York.

HARTSHORN'S SELF-ACTING SHADE ROLLERS

NOTICE SCRIPT NAME OF Stewart Hartshorn ON LABEL, AND GET THE GENUINE HARTSHORN

THE New Model "HALL"



A Perfect Typewriter. Best Manifolder. Terms to Agents Liberal. Portable. Inexpensive. Writes All Languages. *Read Mr. Howell's Opinion.*

"I wish to express my very great satisfaction with the Hall typewriter. Impressions and alignment are both more perfect than any typewriter that I know, and it is simply a pleasure to use it. It is delightfully simple and manageable."

(Signed) W. D. HOWELLS.

Send for Catalogue and Specimens of work.

Address N. TYPEWRITER CO., 10 Temple Pl., BOSTON.

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,

HOWARD STREET, BOSTON, MASS.

SWIFT'S

CHOICE

Chicago Dressed Beef

AND

MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,

UNION STOCK YARDS,

CHICAGO, ILLS.

EVERY one in need of information on the subject of advertising will do well to obtain a copy of "Book for Advertisers," 368 pages, price one dollar. Mailed, postage paid, on receipt of price. Contains a careful compilation from the American Newspaper Directory of all the best papers and class journals; gives the circulation rating of every one, and a good deal of information about rates and other matters pertaining to the business of advertising. Address

ROWELL'S ADVERTISING BUREAU,
10 Spruce St., New York.



PRINT YOUR OWN CARDS

PRESS $3.00
Circular Size $8.00
Press for a small newspaper $44.

SAVE MONEY! Make money printing for others! Type setting easy; printed instructions. Send 2 stamps for Catalogue of Presses, Type, Cards, Paper, etc., to the Factory.

KELSEY & CO.,
Meriden, Connecticut.

IN THE SELECTION OF

A CHOICE GIFT

or of an addition to one's library, elegance and usefulness will be found combined in

A New Book from Cover to Cover.

WEBSTER'S INTERNATIONAL DICTIONARY

Revision cost over $300,000.

SUCCESSOR OF THE UNABRIDGED.

Ten years revising. 100 editors employed. Critical examination invited. Get the Best. Sold by all Booksellers. Pamphlet free.

G. & C. MERRIAM & CO., Springfield, Mass.

"BILLET"

are

Carefully Selected French Sardines,

Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS.

GOITRE, or THICK NECK.

I have a positive, speedy, cleanly, harmless and almost inexpensive cure. Come or write to me at 28 Arlington Court, CLEVELAND, Ohio. It is no iodine smear. Cure made permanent.

Dr. J. CASKEY.

WHAT A DIME WILL DO!

Every BOY and GIRL who loves to read splendid Stories, Sketches and beautiful Poems, should subscribe for the AMERICAN YOUNG FOLKS, a beautiful Illustrated Monthly Magazine, established in 1875. Its stories are the Very Best that can be obtained from the Foremost Writers of Juvenile Literature, and every issue is filled with good things. The regular subscription price is $1.00 a year, but if you will **Cut this out** and return it to us with **a Silver Dime** and your name and address, we will send you the Magazine Six Months on Trial. Address,

AMERICAN YOUNG FOLKS, Manchester, N. H.

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

THE LABORATORY.

To Inventors, Manufacturers and Applicants for Patents

The AMERICAN ANALYST may be consulted upon all matters involving theoretical or applied chemistry. Advice and opinions given. Analyses and assays made. Patents perfected and secured. Terms reasonable.

Address, AMERICAN ANALYST,
19 Park Place, N. Y.

Pure Lager Beer,

"IMPERIAL" and "CULMBACHER"

Brewed & Bottled SPECIALLY FOR HOTELS, CLUBS AND PRIVATE FAMILIES

BY

Beadleston & Woerz

291 W. 10th St. New York.

Orders by Postal Card promptly attended to.

THE ORIGINAL AND GENUINE
(WORCESTERSHIRE SAUCE).



LEA & PERRINS' SAUCE

In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—

Lea & Perrins

Beware of Imitations; see that you get Lea & Perrins'

For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS, NEW YORK.

RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,
184 Greenwich St., N. Y.

GOLD MEDAL, PARIS, 1878.



W. BAKER & Co.'s
Breakfast
Cocoa

from which the excess of oil has been removed,

Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

We can save you Fifty Dollars when you Build. See



A complete set of Plans to build from, simply state about price of dwelling desired. 25 cts. in stamps. Our book "Beautiful Homes." 25 cts. Our monthly book "The National Builder," 25 cts. Address

The National Builder, Adams Exp. Bldg., Chicago, Ill.

The Old Doctor's Book of Secrets.

Tells everything! Over 400 pages, closely printed, with illustrations. Contains medical receipts and prescriptions, and much valuable information all young men should know. Sent securely wrapped in plain wrapper, postage prepaid, to any address for $1.00.

(Send for it. One receipt alone may save you many times its cost.

EUREKA PUB. CO., Box 441, Chicago.





TABASCO PEPPER SAUCE,

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced by connoisseurs to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY'S SON,

NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

ESTABLISHED IN LONDON, 1831.

DEAN'S PATENT

Ardenter Mustard



W. G. DEAN & SON,
361 & 363 WASHINGTON STREET; 84, 86, & 88 NORTH MOORE STREET, N. Y.

AMERICAN ANALYST CLUB RATES.

WE have made arrangements by which we can furnish to our readers any of the periodicals named below at a club rate, with the AMERICAN ANALYST, at a considerable saving. Should any periodical not mentioned be desired, or several of the journals, drop us a postal card and we will give you a rate promptly. For sample copies address the publishers. Terms strictly cash, in advance.

	Publishers' Price.	Our Price, including AMERICAN ANALYST, One Year.
Arthur's Home Magazine	$1.50	$2.35
Babyhood	2.00	2.50
Century Magazine	4.00	4.50
Christian Herald, N. Y.	1.50	2.00
Christian Union, N. Y.	3.00	3.50
Cosmopolitan Magazine (See our Premium Offer.)	3.00	3.25
Cottage Hearth	1.50	2.00
Current Literature	3.00	3.50
Demorest's Magazine	2.00	2.50
Family Story Paper	3.00	3.25
Farm and Fireside	.50	1.40
Fireside Companion	3.00	3.50
Forum	5.00	5.25
Frank Leslie's Illustrated Newspaper	4.00	4.50
" " Popular Monthly	3.00	3.50
Garden and Forest	4.00	4.25
Godey's Ladies' Book	2.00	2.50
Golden Days	3.00	3.50
Good Housekeeping	2.40	3.00
Harper's Bazaar	$4.00	$4.50
" Young People	2.00	2.50
" Weekly	4.00	4.25
" Magazine	4.00	4.25
Home Magazine (Mrs. Logan's)	.50	1.25
Judge	5.00	5.00
Ladies' Home Journal	1.00	1.75
Ledger, New York	2.00	2.50
Life	5.00	5.50
Lippincott's Magazine	3.00	3.25
Magazine of American History	5.00	5.00
New York Weekly	3.00	3.50
Our Day, Boston	2.50	3.25
Outing	3.00	3.50
Peterson's Magazine	2.00	2.50
Popular Science Monthly	5.00	5.25
Puck	5.00	5.00
Review of Reviews	2.00	2.75
Scientific American	3.00	3.50
Scribner's Magazine	3.00	3.25
Youth's Companion	1.85	2.50

ADDRESS **THE ANALYST PUBLISHING CO., 19 Park Place, New York.**

THE QUEEN'S PRIZE SCHOOL OF HISTORY.

About two years ago the publishers of THE CANADIAN QUEEN added what has proven to be a very popular and successful feature to their publication in establishing their Prize History School. It has offered competitive examinations in English, Canadian and American History, giving valuable rewards to those making the most correct answers. During this time there have been added the names of over forty thousand new subscribers to their books. Rewards have been made by THE QUEEN which have cost them in cash over ten thousand dollars. THE QUEEN'S Prize School of History has received the sanction and support of the clergy, press, and, in fact, of the best people of the Dominion of Canada. The following, taken from a leading daily newspaper, expresses an opinion which is universal:

A HANDSOME PRIZE.

AN EVIDENCE OF WHAT A GENUINE MAGAZINE COMPETITION OFFERS.

"On Friday there arrived from Toronto, for Miss M. Hora, a handsome Shetland pony, harness and cart, being the first award in the Royal Quilt Competition of THE CANADIAN QUEEN magazine. It attests the genuine nature of the magazine's contests by its excellent condition and value. THE QUEEN has frequent competitions and has made innumerable awards, displaying a generosity quite surprising to those who have had experience of the limited field for Canadian journalistic enterprise. But THE QUEEN has been a success as a business venture from the start, and is growing in literary excellence steadily. It covers the field of fashion, as well as light reading; talks to the household, the young, and, indeed, all home classes. The competitions have been used to assist the introduction of the magazine, for where it is introduced it is quite certain to remain a monthly guest. The leading prizes have been made, as instance this latest to Kingston, while many smaller prizes have rewarded the moderately successful among competitors. THE CANADIAN QUEEN is truly royal in its ways."—*The (Kingston, Ont.) Daily British Whig*, June 27th, 1891.

QUESTIONS IN AMERICAN HISTORY.

1.—Give the names of the early navigators who it is claimed by historians first discovered America.

2.—From whom has America taken its name?

3.—What class and nationality first settled Virginia? New York? Massachusetts? Pennsylvania? Maryland?

4.—What action did the Continental Congress of 1774 take and what was the result of that action?

5.—What was the first battle fought in the War of the Revolution?

6.—What nation rendered the Americans great assistance in the War of the Revolution?

7.—Give the names of the committee appointed to draft the famous Declaration of Independence.

8.—What was the date of the signing of the United States Constitution?

9.—After becoming a nation and before the great Civil War, what were the principal conflicts which engaged the Americans?

10.—What was the direct cause of the Civil War? What Generals of the Northern Army have occupied executive positions under the Federal Government since the closing of the War? Who was Commander-in-Chief and who were the principal Generals of the Confederate Army during the struggle?

11.—How long did this War last and what is the computed loss of life?

12.—What can be said to day of the United States as a nation?

To the *First* gentleman sending the correct answers to the above questions in American History the publishers of THE QUEEN will present "**Majestic**" acknowledged the **Handsomest and Finest Riding Horse in Ontario.** ("Majestic" is sixteen hands high, thoroughbred, seven years old, and valued at $350.00.) To the *First* lady the publishers of THE QUEEN will present an elegant **Jacket of Genuine Alaska Seal** to be made according to the measurement supplied by the winner. To the *First* boy under sixteen years of age the publishers of THE QUEEN will present a **Little Giant Safety Bicycle** valued at $75.00. To the *First* girl under sixteen years of age the publishers of THE QUEEN will present an elegant **Music Box,** playing twenty tunes, finely finished and valued at $55.00.

To the gentleman from whom the *Last* correct answers are received before the close of this Competition, the publishers of THE QUEEN will present a **First Cabin Passage to Europe and Return** and **$200 in Gold** for expenses. This trip can be taken by the winner any time before October 1st, 1892. To the lady from whom the *Last* correct answers are received before the close of this Competition the publishers of THE QUEEN will present a **Pony, Cart and Harness.** To the boy under sixteen years of age from whom the *Last* correct answers are received before the close of this Competition the publishers of THE QUEEN will present a **Solid Gold Watch** containing one of the best American movements, and valued at $75.00. To the girl under sixteen years of age from whom the *Last* correct answers are received before the close of this Competition the publishers of THE QUEEN will present an elegant **Solid Gold Watch,** containing one of the best American movements, and valued at $65.00.

ADDITIONAL PRIZES IN ORDER OF MERIT: Silver Tea Services, Ladies' Gold Watches, Silk Dress Patterns, French Mantel Clocks, Portiere Curtains, Toilet Cases, Manicure Sets, and many other useful and valuable articles.

The object of the publishers in offering these liberal prizes is to introduce THE QUEEN Magazine into **new** homes. Answers must be mailed *on or before* November 10th, 1891, and must be accompanied by $1.00 for one year's subscription to THE CANADIAN QUEEN. Prizes awarded to subscribers residing in the United States will be shipped to them **free of duty.** The distribution of awards is in the hands of disinterested persons, and decisions will be based on the correctness of answers. Use your own language in wording the answers. No corrections can be made after your answers are mailed. THE QUEEN is a large, forty-eight page family magazine, especially interesting to ladies and children, and visits regularly **over one hundred thousand of the best homes** in Canada and the United States. The awards in THE QUEEN'S Prize School of History are made strictly with regard to merit, without partiality to persons or locality. The decisions must be accepted as final. If you have never seen a copy of THE QUEEN send six U. S. two cent stamps and receive a late number, post paid, containing letters from those who have received rewards in previous contests.

Address THE CANADIAN QUEEN, PRIZE SCHOOL OF HISTORY, 58 BAY STREET, TORONTO, CANADA.

GLENN'S SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,

C. N. CRITTENTON,

115 FULTON STREET,

NEW YORK.

IF you wish to advertise anything anywhere at any time write to **GEO. P. ROWELL & CO., No. 10 Spruce St., New York.**

AN EDUCATION FREE! Do you want a good business education, including English Branches, Commercial Law, Business Forms or Book-keeping, or Shorthand and Typewriting, Languages, or Architectural or Mechanical Drawing, or Elocution **ABSOLUTELY FREE** in one of the largest, oldest and most prominent Business Colleges in the country? All you have to do is to get up Clubs for the **BUSINESS WORLD,** one of the brightest, newsiest and best office and home papers in the country. Established 14 years. Subscription price, with premium worth price of subscription, only $1.00 per year; handsomely illustrated. The BUSINESS WORLD will give Scholarships to those getting up Clubs. Write for particulars, **BUSINESS WORLD, 15 WILCOX AVE., DETROIT, MICH.**

ARROWHEAD HOT SPRINGS, CALIFORNIA.

I MOST respectfully invite physicians of the East to write to me for information concerning this famous Southern California resort. The hot mineral water mud baths, and climate are unequalled in America. Diseases of the throat, lungs, liver, stomach and kidneys, nervous and skin troubles and rheumatism, are the ailments successfully treated. The hotel contains 125 rooms, is first-class, and lighted throughout with incandescent lights. Elevation 2,000 feet. Address,

H. C. ROYER, M. D.,

Arrowhead Springs, San Bernardino Co., California.

BLAIR'S PILLS.



Great English Remedy for GOUT, RHEUMATISM and KIDNEY COMPLAINTS.

SURE, PROMPT and EFFECTIVE.

Large Box, 34; Small, 14 Pills.

At all Druggists, and

224 WILLIAM STREET, NEW YORK.

CONFEDERATE MONEY.

Warranted Genuine and in Good Condition.

We are extensive dealers in Confederate Money—rare relics of our late civil war; also Bullets, Cannon Balls, etc. We want agents in every city North to sell these mementoes, and we will pay agents handsomely to sell our goods. We will furnish the money to those desiring at the following retail prices: Shinplasters, 10, 25, 50 and 75 cents each, or the entire set 50 cents. Complete sets, consisting of $100, $50, $20, $10, $5, $2, $1, 50c., $1 per set. $500 bills, $2.50 each. $100 bills, 15 cents, or two for 25 cents. $50 bills, 10 cents, or two for 15 cents. $5 and $20, 5 cents each. 50c., $1 and $2, 25 cents each. Inquirers enclose stamp for reply.

Publishers of SOUTHERN AGENT, Atlanta, Ga.

LITTLE BOYS AND GIRLS

MAKE EASILY $2 A DAY.

Write for particulars. Address

BARKER PUBLISHING COMPANY, Atlanta, Ga.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 45. NEW YORK, THURSDAY, NOVEMBER 5, 1891. WHOLE No. 245

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - $1.00 per year.
Single Copies, - - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.
Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.
Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,
H. LASSING, M. D., } *Editors.*
T. P. McELRATH, }
No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

Astronomical Conjectures 533
Autumn Leaves 531
Bathing in Paris 533
Bright Stories.
An Artificial Mirage 532
Carnivorous Plants 530
Cider without Apples 531
Domestic Dietetics 535
Editorials 529
The Weather Bureau; Pure Food Prospects; Women who Want to Vote; Ale—English and American.
Lager Beer 533
The Columbian Exposition 534
Tropical Storms 531

THE WEATHER BUREAU.

The new chief of the Weather Bureau, Mr. Harrington, on October 20th sent to the Agricultural Department a special report of the operations of the bureau since its transfer to that department on July 1st last. Mr. Harrington says the service has been reorganized, with a view of carrying out the expressed intention of Congress to especially develop and extend its work in the interest of agriculture. The daily cotton region reports, consisting of maximum and minimum temperatures and rainfall, met with great favor. At the urgent request of those interested in cotton, telegraph information of the first killing frost at every cotton region station will hereafter be included in these reports. A service similar to that now carried on for the benefit of the cotton interest has been requested for the sugar and rice interests of south Louisiana. It is designed to establish not exceeding ten stations of observation in the sugar region, from which reports of temperature, rainfall, and frost will be telegraphed to a designated centre daily, and this information will be given the press for publication and disseminated generally throughout the sugar belt in bulletin form, for the information of the planters and factories. Since the first of July new weather services have been organized in Arizona, California, Florida, New Mexico, North Dakota, Oklahoma, Utah, Virginia, Washington, West Virginia, and Wyoming. More than a hundred voluntary meteorological stations have been established and equipped with instruments at the expense of the bureau since July 1st, and nearly as many have been established by the bureau, but were furnished with instruments at private expense. On September 30th there were over 1,200 weather signal display stations in operation, an increase of about 100 per cent. in less than three months. There are now probably 2,000 voluntary observers in the United States reporting to the Weather Bureau, an increase of about 400 in the past three months, and steps are being taken to cover every section of each State and Territory in the United States with volunteer stations of observation, so as to leave no section without stations from twenty to thirty miles apart. A compilation of climatic data for southern European countries, including the Riviera, called for during July of the present year, has shown that portions of the United States possess climatic conditions surpassing in some respects those of the health resorts and sanataria toward which travel has been directed for a century.

PURE FOOD PROSPECTS.

While the manufacturers and dealers in food products are borrowing the mantle of professed "purity" to attract attention to exhibitions of their wares, a genuine movement in behalf of pure food is being diligently prosecuted by the authorities in Washington. At the coming session of Congress the subject of pure food legislation will probably be revived, and it is reasonable to hope that some tangible results will be reached. Senator Paddock, of Nebraska, spent a deal of time on his pure food bill in the last Congress, and it would probably have passed the Senate if there had been time to consider it. It was put on the Republican caucus programme during the closing days of the session, but other important measures prevented its being reached. The bill, as finally perfected, limited Federal control of food products to those which were the subject of commerce between the States or with foreign countries. This rule escaped the constitutional difficulty of interfering with commerce within the States, while making it pretty certain that the standard for inter-State commerce would soon become the standard for all traffic in food products. Most industries of any magnitude manufacture for consumption outside their States as well as within them, and domestic consumers would hardly be content to accept a different grade of goods from that required by the people of other States. But the agitation in behalf of pure food has extended beyond the limits of the United States and has grown into a subject of international discussion. In his forthcoming annual report Secretary Rusk will, we are informed, recommend the establishment of an International Commission to protect the people of the leading civilized counties from impure and adulterated foods. The plan originated at the recent Agricultural Congress at the Hague, and was recommended by vote of the Congress to all the governments represented there. Dr. D. E. Salmon, chief of the Bureau of Animal Industry, was representative of our Government at the Congress and is warmly in favor of the proposed commission. The commission, while international in its scope, would in practical operation be more like a body of national commissioners in each country, co-operating with each other by constant correspondence. The local commission in each country would be charged with watching the enforcement of the local laws, and would assist the commissioners in other countries by informing them promptly if impure food products were received from their countries. Meetings of delegates from each local commission would undoubtedly occur once or twice a year, and legislation would gradually be urged upon the different countries as nearly uniform and complete as local feeling would permit. The exact form in which the matter shall be presented to the various governments was not decided at the Congress, but it is probable that the offices will send a copy of their resolutions to the Foreign Office of each of the governments taking part, and their natural course will be to refer them to the Ministry of Agriculture or of Internal Affairs. This is what will be done in this country. The subject will probably be discussed in Cabinet meeting, and Secretary Rusk will be a warm champion of any measure for protecting the purity of the food supply. If proper legislation is adopted, without extending too much the army of office-holders or interfering too much with private enterprise, it will be of benefit in extending our foreign trade.

WOMEN WHO WANT TO VOTE.

The Workingwomen's Society, the central body representing the organized workingwomen of New York, has passed, unanimously, resolutions stating that disfranchisement is a burden too heavy for any class of people to bear; that hundreds of thousands of the poorest people in this State are most unjustly and unlawfully disfranchised, thus making their poverty far worse than it would otherwise be; that this poverty is such that in New York City alone over a hundred thousand working women are toiling on starvation pay, and that this dreadful poverty of workingmen's sisters widows and daughters is the main cause of the worst of public evils, and calling on the Legislature to relieve the working women of the State from the burden and

READ PAGE 537.

wrong of disfranchisement before it next adjourns, also specially requesting every Senator and Assemblyman from New York to use his utmost influence to secure the immediate passage of a law relieving of disfranchisement every women citizen in the State who lives by her own labor. The Society also indorsed a bill heretofore approved by several central unions enabling all self-supporting women to vote. This is a wholly new step by the organized working women.

ALE—ENGLISH AND AMERICAN.

An advertisement of a certain brand of English ale, which has lately been published, has attracted our attention, because it gives some apparently valuable information to consumers of ale. This advertisement, in stating the advantages possessed by this brand, enumerates among others that it is bottled in London, and never mixed with other ales. The inference is obvious that ales bottled in this country as imported ales are frequently mixed with American made ale, or perhaps entirely of American brewing. We believe that just as good if not better ale can be and is brewed in the United States; but if this is bottled and labelled as English ale, a higher price is demanded for it, and so far it is a fraud upon the purchaser to sell him American ale for foreign at an advanced price, though the American ale may be intrinsically the more valuable. The second point in the advertisement points strongly to another fraud upon the purchaser of imported ales, even if by good luck he buys real imported ale, and that is that the English brewers sell some thirty-five different qualities of ale—which of course are of different values—and the question arises, How can the purchaser know whether he gets the best quality of ale for the highest price? A third point relates to the treatment of the ale by the bottler. Does he allow it to ripen in the cask before bottling it? The fourth point relates to the clear and brilliant appearance of the ale, and here another consideration comes in. In England, as in all European countries, the consumers of ale and malt liquors do not drink the ale at as low a temperature as the American consumer does; therefore, an ale brewed for English consumption will not bear as low a temperature as it is invariably subjected to in this country. An English ale, brewed for English use, would become cloudy and muddy when chilled, as it is required to be here; and another thing, Americans demand a brilliancy of malt beverages that is far beyond anything required by Europeans. An ale rich in extractive matter cannot stand the chilling process demanded here, and never can be made as brilliant as the American taste requires. The consequence is that ale for American consumption has to be specially brewed for that purpose, and very naturally the really valuable qualities of a malt liquor have to give way to the appearance. It is for this reason that when Englishmen visit this country they invariably find that our imported English beers do not taste like those they have been accustomed to at home. In many cases, indeed, they express a decided preference for some of the better brands of American brewed ales. Such advertisements as the one we now refer to are sometimes very helpful in determining the value of the class of goods advertised.

CARNIVOROUS PLANTS.

PLANTS THAT DEVOUR AND ASSIMILATE ANIMAL FOOD.

The following discussion of one of the great wonders of the vegetable kingdom appears in a contribution by S. L. Clayes to the *Popular Science News* for October. There are certain plants which seize and prey upon insects. The fact of the capture is beyond doubt, and the plants which are capable of this feat are known generally by the name of fly-catchers. But while many fly-catchers can make no claim to being fly-digesters, there is among them a class of plants which, to all appearances, possesses the power of assimilating animal food and being nourished by it. One of the most conspicuous of this group is *Dionæa muscipula*, the Carolina catch-fly, or Venus fly-trap. It is a native of the Southern States, North Carolina being, I believe, the northern limit of its growth, and like so many of its species, it always finds its home in some bit of marshy land. To attain true success in its artificial cultivation a pot of bog earth is required, which should be kept constantly standing in a deep saucer of water. The appearance of this plant is so peculiar that when once seen it is not readily forgotten. A leafless scape, six inches in height, rises from the root, and terminates in an umbel of white flowers; these are, however, of distinctly subordinate interest. Its winged leaf-stalks spread themselves out like a kind of rosette about the root, each bearing a broad leaf, so curious in the strange powers which it displays as almost to convince that the plant can lay claim to a sentient life. The leaf proper is orbicular in shape, and has a hinge-like mid-vein, upon which the halves swing smoothly, opening and shutting with great speed and ease. Each half is somewhat concave upon the upper surface, and is bordered by a row of spines thickly placed around its outer edge, and set at such an angle as to cross when the blades are closed. They have, also, a power of separate movement, and interlock like the fingers of two hands. They remind one irresistibly of the teeth of a steel trap, which, in fact, they also resemble in the use for which they are designed. On the central part of each blade we find three conspicuous hairs. These are of the greatest sensitiveness, delicate, irritable, and so placed that even a small insect can hardly alight or move about upon the leaf without touching one or more of them. Over the surface of the blades are also strewn many small red globules, or glands, which are most numerous in the vicinity of the hairs. Provided the leaf upon which it grows be vigorous, no sooner is one of these irritable hairs touched—be it never so lightly—than the blades spring together, the spines cross at right angles, and presently a slightly glutinous secretion begins to flow from the red globules, which is supposed to be the active agent in the process of digestion. It is not improbable that the fluid from these glands may also serve to attract insects and cause them to alight upon the plant. While it is not well to often touch these hairs, and thus provoke the leaf to close—for much handling seems in a measure to weaken the powers—we can watch the action in other ways. On a warm day in summer we may reasonably count upon finding our fly-catcher with a keen appetite and alert for opportunity. Its red glands glisten in the sun, and a fly, espying the pretty sight, and maybe attracted, too, by some odor suggestive of delicate feasting, alights upon the leaf. Perhaps at his very first step he brushes against one of the sensitive hairs, when the two halves instantly close. Even were the process less prompt than it is, or the leaf imperfectly shut, the fly would be captured, for the interlocking marginal spines form such a network above the poor insect as to effectually prevent his escape. In his efforts to find a way out he will run up and down, and be sure again and again to come in contact with the hairs, which, proving each time responsive to his touch, even more tightly lock the walls of his prison about him; while the force of the contraction is so great that should he put forth all his power of strength it will be in vain—he cannot force them open. Now the leaf is shut, but on a close examination we find that the blades really touch only at their margins, and that a hollow space of considerable size is left open in the centre. By holding the leaf against the light we can see the imprisoned fly nervously moving about all over this space in anxious search for some means of deliverance. If he be not of too great size, the saucer-like form of his cell at first saves him from serious pressure. For a while there seems to be nothing more amiss with the little creature than being deprived of his liberty. When at the end of two or three hours this leaf has been forced open, he has usually, after a moment of bewilderment, been able to fly away as if all things were well with him. It is uncertain how long the captive may be held alive within these prison walls. I have seen one moving about after more than fifty hours. After an imprisonment of two days the fly has been liberated and found to be still alive; but the poor insect under these circumstances has never recovered. It is a hopeless task to attempt to save him when once he has been bathed in the fluid from the glands. Although he may be cleansed with the most delicate care, and every particle of the viscous stuff appear to be washed away, the poison seems to have entered his system, and the poor creature is doomed to succumb. When the fly is not removed, and matters are allowed to take their natural course, the two blades of the leaf continue to pass more and more closely together, until they actually touch each other, so far as the body of the insect—or what remains of it—will permit. The mucilaginous fluid discharged by the glands yields, upon examination, some formic acid, and it also contains a substance very like pepsin. By its aid a portion of the fly's body is digested, and the digested mass is absorbed by these same versatile red glands which produced the fluid, and which have in their interior certain formations that botanists call *stomata*, a name which is derived from a Greek word signifying mouth. The process of digestion in the plant, far from being hurried, is one of the greatest deliberation. The time occupied varies from one to three weeks, its duration being influenced somewhat by the size and vigor of the leaf, but far more by the kind of food which is being absorbed. Soft-bodied insects, flies, spiders, and those of like texture are more quickly disposed of than beetles and others which have hard or shell-like coverings, and small creatures disappear more speedily than larger ones of the same sort. The size of the insect thus caught and capable of being digested seems also to bear direct proportion to the size of the plant. Experiments tried upon an unusually large specimen of Venus fly-trap have been most interesting in their results. One leaf, measuring one and five-eighths inches in length from end to end, and three-fourths of an inch from mid-rib to edge, with spines one-half inch long and numbering nearly four dozen in all upon the two halves, caught and consumed not only formidable spiders, but a horny beetle as well. When the blades at last open through their own impulse, the viscid secretion of digestion has disappeared; the leaf is dry, clean and bright; the dissicated skeleton of the fly is ejected, and sometimes it is found to have been so firmly pressed between the blades as to leave its impression indented line for line, with great accuracy, upon their soft substance. The *Dionæas* will accept artificial feeding, and as readily digest some of the articles eaten by man as their own more usual diet of insects. Milk they seem to really relish, and in their leavy stomachs it speedily resolves itself into the orthodox curds and whey, which are afterwards absorbed—some nine days being required to dispose of the curdy part. But while milk seems to afford suitable nourishment—unless given in too great quantity—cheese they do not tolerate at all, the leaf to which it had been fed turning black and dying upon every occasion, whether the article offered was newly made or of the ancient and mouldy class. Salt, so grateful to the human stomach, proves a positive poison to these vegetable ones. The boiled white of an egg, however, they find quite to their taste. Small bits of raw beef are also accepted and apparently digested. When, after having been for two or three days exposed to the action of the digesting fluid, these morsels were removed from the leaf, they were found to have become white, tender and easily macerated, and showed not the least tendency toward a putrid decomposition. The Venus fly-traps,

however, by no means of a glutton-like habit, and a leaf which is overfed will surely die. But they generally know when they have had enough, and can no longer be tempted, the sensitive hairs refusing to respond, no matter how cunningly they may be manipulated. Another idiosyncrasy of the plant is that it prefers the victims of its own bow and spear to any that may be captured for it; and it manifests something very like intelligence in its quiet but persistent rejection of practical jokes offered in the guise of small pebbles, grains of sand, and other substances impossible to its digestion. Indeed, it may be termed truly refined in its tastes, when compared with other fly-catchers, notably the *Sarracenia*. These plants, after capturing their food in immense quantities, and of any sort that comes to hand, leave it to putrify within their pitcher-like receptacles, which reject nothing; and the plants subsist and thrive finely upon this revolting mass, which makes itself manifest by its foul odor for some distance around. Our *Dionæa*, on the other hand, being, perhaps—who shall say?—under some subtle influence emanating from the lovely goddess whose name it bears, is as tidy in habit, as fastidious in taste, as the most dainty of women. It closes its leaves, it is true, upon any foreign substance that may be placed within them, responsive, always to the irritation of the hairs; but unless it finds the matter enclosed in its embrace to be suited to its tastes or needs, it is as sure to be expelled as if the plant was possessed of reasoning power. When the experiment was tried of cutting off the sensitive hairs and thus removing them altogether from the leaf, it was followed at first by its closing; after a while it opened again, and then the action became as truly capricious as if the plant was endowed with will-power. Sometimes the leaf failed to respond at all when irritation was applied to the parts where the hairs had been; at others, the two halves came together just as they do when all is perfect; again, the action followed slowly and awkwardly when a considerable time had elapsed after the irritation had ceased.

AUTUMN LEAVES.

SIMPLY A CHEMICAL CHANGE IN THE COLORING MATTER.

Donald Mitchell, in one of his delightful essays, has characterized the brilliant display which marks the progress of Fall as the "Autumn miracle." Certainly there is much about this transformation of the foliage, this lavish spread and swing of color, that stamps it as such. The touches of this mystical painter for this year are already seen on the neighboring hills and woods. The pale greens and yellows, usually the first in order, have appeared, and the flush of the pinks in many places begin to deepen to a dead red. Science, with its learned explanations, has never been quite able to efface all the romance which surrounds this change. There is something interesting, to be sure, in the relations between the fruit and the leaf. They are really twin brothers, it seems, only the one has been given better opportunities than the other, and so makes the earlier show in the world. Their course in life, however, is the same. They mature, change color and then fall, alike. This fancied touch of the painter is only a chemical change in the coloring matter of the chlorophyl, and the flush on the cheek of the peach is not at all different from that on the Autumn leaf. This is science, but it does not afford half the pleasure that did the thought that it all was due to the sturdy breath of the north wind. However, cold weather has little to do with this work of transformation. One of the most brilliant Autumnal displays in the White Mountains was that of some dozen years ago. The whole sides of many of the hills seemed to have been converted into sheets of flame. Heightening the effect was a ground covered lightly with the fall of first snow, the scarlet hues of the foliage flashing within this chaste setting. The explanation was that the cold weather had set in unusually early, while the leaves had been late in ripening. Leaves are attached to their stems by a series of thickened cells. As these grow old and harden, the leaf is released and thus falls. Oak leaves, however, are not subject to this change of color or falling in the Autumn. They are like certain kinds of apples; ripening has no effect upon their appearence. Oak leaves this season present a dead and decayed appearance, while all their neighbors are flashing in the brightest raiment. Boston every year sends delegations to New Hampshire to witness the Autumn miracle. Notable in their devotions are many of the members of the Appalachian Mountain Club. Preparations are now being made for the Fall pilgrimage.—*Boston Journal.*

TROPICAL STORMS.

DESCRIPTION OF THE APPROACH OF A MONSOON IN INDIA.

Let me try to give a pen picture of the end of an India summer and the beginning of the period when the monsoon rains descend. Day after day the sun pours down withering heat, the air is sick with it, the ground is hard as iron, and gapes in great cracks, as though open-mouthed, pleading to the pitiless sky for a drop of water; the wide expanse of a country that a few months past was green and flower-besprinkled is brown, the grass crisped with a fierce heat and falling to powder if rubbed; the trees, mostly evergreens, are parched and dusty; no breath of air rustles through, no leaf stirs. They resemble great toy trees, with leaves of painted wood. There is no sound of life anywhere; the noisy, green parrots are silent, and hide from the sun in the heart of the densest and leaflest top. You may, perhaps, see a crow or a mynah sit solitarily on a bough, with drooping wing and gaping beak, helpless in this great purgatory of fire. "The monsoon, the monsoon—will it never come?" you ask as you toss half naked on your bed, worried by prickly heat and insects which shall be nameless, not the worst of which is the persistent blood-sucking mosquito. Heat apoplexy has, perhaps, prostrated one or two of your friends, and a second in the open air unhelmeted would be sudden death. "Will the monsoon never come?" Every evening the sun drops down in the west like a great ball of fire, but leaves the heat behind him. One evening you notice with great joy two or three black clouds climb up the east to take a peep at his descending majesty. They are the advance guard, you think, of the monsoon and it will surely rain before morning. Morning dawns, and the sun sets to blowing his heat furnace strong as ever; the sky is once more a great dome of burnished brass. The monsoon at last blows the warning trumpet, and the soughing of his wind to the far-away horizon calls you out from your bed to the veranda. Nature holds her breath; a great calm, a strange hush—the hush of expectancy—fills earth and air. Ha! here comes the monsoon. Away on the western horizon a great black cloud wave surges up toward the zenith, blotting out the burnished sky in its progress, just as though you poured ink slowly into a brass bowl. Behind this black wave, and moving with it, is a great dense ebon mass, cut, every instant by forked lightning and bellowing, deafening thunder. The quick darting adder tongues of flame flash everywhere, search the bellowing heavens throughout from top to bottom, throughout the whole cloud-packed dome. Now, for a second, only for a second, the quick-flashing lightning ceases, and an inky blackness, the blackness of Erebus, succeeds, and the thunder bellows as an Englishmen in his sea-girt little isle never heard it bellow. It is no distant rumble, gradually rolling nearer and culminating in a resounding crack overhead. No; around, about, and just over-head the infernal din never ceases. The bellied clouds are pregnant with thunder, and the flame forks flashing hither and thither pierce their wombs and loose the thunder from its prison. It reminds one of Michael and his celestial host warring with Lucifer and his legions. It is terrible. Inside your bungalow the first advancing wind that heralded the monsoon carried with it clouds of blinding dust, which is now piled up an inch high on table and chair, and shelf. And still the war of the elements goes on. You cannot hear your neighbor's voice, though he shouts his utmost; the birds, affrighted, shriek in the thickets, and the native servants huddle themselves together in dark corners for safety. The sky opens its floodgates, and rain in torrents pours down without intermission for eighty or ninety hours on the parched earth. Splash! Splash! on the roof—not in showers, but in sheets. This is the monsoon. And when it has passed what a transformation it has effected. The arid plain is one great lake, through which rise innumerable trees of glossy green, and crowding their leafy cathedrals flocks of parrots and mynahs chatter their thanks to God for the welcome rain. The great lake soon disappears, absorbed by the thirsty earth, and reveals a far and fair expanse of verdure beautiful beyond words in its dazzling greenery, and sprinkled with flowers that have shot up in a night, earth's embodied hymn of praise to the Creator for the blessing of the monsoon.

CIDER WITHOUT APPLES.

HOW THE ADULTERATOR CONTRIVES HIS CONCOCTIONS.

The *National Druggist* gives the following formula for imitating apple cider as closely as possible:

Powdered catechu	3 parts.
Alum	5 parts.
Yeast	32 parts.
Honey	640 parts.
Water	12,800 parts.

Let ferment for fifteen days in the sun (or other warm place), then add

Bitter almonds	8 parts.
Cloves	8 parts.
Burnt sugar	32 parts.
Good Bourbon whiskey	384 parts.

Let stand a day or two, and rack off. If it be too sour, add honey, and if too sweet, add acetic or citric acid to suit. The above makes a "cider" difficult to tell from that made naturally from apples. A good cheap imitation may be made as follows: Twenty-five gallons of soft water, two pounds tartaric acid twenty-five pounds of brown sugar and one pint of yeast are allowed to stand in a warm place, in a clean cask with the bung out, for twenty-four hours. Then bung up the cask, after adding three gallons of whiskey, and let stand for forty-eight hours, after which the liquor is ready for use.

ENGINEERS' CONVENTION.—The twelfth annual meeting of the American Society of Mechanical Engineers will be held at the house of the Society, 12 West 31st Street, New York, commencing Monday evening, November 16.

COAL AND AMMONIA.—It has been estimated that one ton of coal gives enough ammonia to furnish about thirty pounds of crude sulphate, the present value of which is about $12 per ton, and there being 10,000,000 tons of coal annually distilled for gas, no less than 133,929 tons of sulphate, of the money value of $1,607,148, are produced.

LUBRICANT WANTED.—Too many engineers behind the times still use tallow as a cylinder lubricant, says an exchange, and by so doing run a great risk of eventually destroying the engine, as the several fatty acids, stearic, oleic, margaric, etc., of which tallow is composed are almost sure to eat out the valve seat, piston rings and other parts of the cylinder. Some good mineral oil should be used, which is known to have a reputation.—*Invention, London.*

BRIGHT STORIES.

AN ARTIFICIAL MIRAGE.

ROBERT DUNCAN MILNE, IN "THE ARGONAUT."

While strolling one day, a week or two ago, with a friend, in the environs of San José, my attention was attracted by some unusual operation, which was going on in the grounds of a handsome suburban residence. The lane upon which we were walking was separated from the aforesaid grounds by a hedge and a broad fringe of hop-vines, beyond which, again, was a circular level space of, perhaps, two acres in area, from which the hop-vines that had formerly covered it had been nearly all removed by a gang of laborers, who were evidently nearing the completion of the job. One of the unusual features of the operation was that the hop-vines that were being removed gave promise of yielding a plentiful and therefore valuable crop of blossoms; another lay in the fact that several acres more of hops, immediately surrounding the cleared area, were left untouched. I confess that my curiosity was piqued to imagine a cause for so singular a proceeding. Neither could my companion, Harkness, venture a reason for it. It was evident, moreover, that considerable care was being used in clearing the area to a certain scale, as a stake was driven into the ground at its centre, to which a rope was attached and stretched to the periphery of the area, the other end of the rope being held by a gray-bearded man, in a white duster, who was slowly pacing off the limit to which it was clearly intended the hop-vines should be cleared.

"Maybe the old fellow's a horse-breeder," suggested Harkness, at length; make a capital training course for horses, wouldn't it?"

"But it's a good hundred yards across," I returned; "breeders don't want Roman amphitheatres to speed horses in. Besides, consider the expense of the amusement in the present instance. No; we must try again for a reason."

"Eccentric, to say the least, whoever he is;" and we passed on in the direction of the town.

Some little distance further on we came upon a man at work upon a hedge on the other side of the lane, whom we asked regarding the identity of the person we had been discussing.

"Oh, old Dr. Wyman, you mean," said the man, smiling. "Yes, people say he's a little cracked in the upper story. Smart man, though. I've heard said he could give them fellows up Mount Hamilton way pointers upon science. He's got telescopes and microscopes and such like up in his house would do you good to look at if you're interested that way."

"It might be worth our while to drop in on the old fellow," remarked Harkness, as we passed on; "I'm curious to know what that big circular space is being cleared for, anyway."

Accordingly, we made an appointment, when it would be convenient for both of us to walk out in that direction again, and one day last week found us once more on the way to Dr Wyman's residence. From inquiries made meanwhile in the town, we had learned that the gentleman in question had only recently arrived in San José, and that he was reputed to be a man of considerable means, having paid a good round sum to its former owner for the place he occupied.

Passing through the entrance-gate, a walk of about a hundred yards through a well kept orchard brought us to the door of a neat and commodious one-story residence, the trim flower-beds and grass-plots surrounding, which gave evidence of refinement and culture on the part of those whose home it once had been. A good and sufficient reason for our paying what might otherwise have been construed into an intrusive visit to an utter stranger, lay in the fact that Harkness, who is something of a microscopist, could not make a sufficiently exact examination of some forms of infusoria that he had chanced upon in the neighborhood, with his own instrument, and hearing that Dr. Wyman possessed a lenticular microscope of very high power, and the newest construction, had called to see whether he might not be permitted to use it for the purpose named.

Dr. Wyman received us cordially, and readily put his instrument at my friend's service, at the same time leading us into a large apartment which he called his observatory, and in which many optical and other scientific instruments were arranged within cases or stood upon tables, besides a very fine six-inch equatorial, pointing upward toward a shuttered aperture specially provided for it in the roof. After spending half an hour or so in conversation, and arranging a time at which Harkness should call with his specimens, we prepared to go, our host putting on his hat and accompanying us out into the grounds. The path to the gate led us close to the growing hop-vines surrounding the cleared area before described, which was with difficulty discerned through the thick growth. I could not resist the impulse to ask the meaning of the peculiar clearing which had so excited our curiosity in the first instance, and had been indirectly the cause of our present visit.

"Ah! you have noticed the clearing I have had made in there," said the doctor, stopping and motioning toward it; "and you, no doubt, wonder what can have possessed me to sacrifice a profitable crop at such a time and in the manner I have done. Well—I do not know whether I should be doing myself justice—perhaps exposing myself to ridicule—by explaining the exact purport—going into particulars about the intent and scope of what I propose to accomplish—have very good reason to believe I shall be able to accomplish."

Our host spoke with hesitation, and, at the same time, with a deliberation which showed that he was weighing every word carefully before giving it utterance.

"It is not that I have not full confidence in your discretion not to give a premature or garbled account of what I purpose doing. It is rather that I am not ready—have not yet completed my preparations and—you know the proverb about the injudiciousness of letting people see things half done," added the doctor, smiling. "But," he went on, abstractedly, "there can not be very much harm in giving you some slight idea of the matter. I must have witnesses sooner or later, and nothing would please me better than the presence of gentlemen of intelligence, like yourselves, who would allow for imperfections, even failures, of result, if these should unfortunately turn out to be the case. Come with me, then," he added, abruptly, after a pause; "I can show you what has been done, and, perhaps, be able to explain what I mean to do."

So saying, our host led the way through the rows of hop-vines, till at length we emerged upon the circular, open clearing.

If the mere spectacle of the clearing of the large circular area, which had excited our curiosity two weeks before, was peculiar, that which was now presented to our gaze was perfectly inexplicable. Before us lay spread a circular apace, about one hundred yards in diameter, surrounded by hop-vines seven or eight feet in height. Dr. Wyman led the way across this area, and, to my astonishment, I saw that trenches, about a foot in width and the same in depth, had been dug across the whole of the area from north to south, about six feet apart from each other, and that lengths of cast-iron piping, a foot in diameter, such as is used for large gas or water-mains, had been laid along the trenches, so that their upper sides were flush with the surface of the soil. The castings were connected together, in the usual manner, by joints, some ten feet apart, and, in the centre of each length, there was a circular orifice about an inch in diameter. At five nearly equidistant points at one side of the circle, where the piping ended, were set as many engines of a peculiar type, and as we passed round the circle, near where they stood, I could see that the pipes, of which there were fifty rows, were connected in sets, varying from twelve to eight, according to their length, by a transverse pipe ending in the boilers aforesaid.

"There is nothing complicated about the apparatus, you see," remarked the doctor; "these," pointing to what I thought were engines, "are merely generators of caloric. The hot air, generated by the furnaces, is forced by fans through that system of piping. The other ends of the pipes are closed, so that there is no escape for the hot air except by the vent-holes you may have noticed in the pipes. The work has cost me a good many thousand dollars, but I shall be amply repaid if the result meets my expectations. It will be a day or two yet, however, before all my preparations are complete, and then I hope you will favor me with your company to witness the *denouement*. To day is Wednesday. What say you to Sunday next? Agreed! Then if you will accompany me to yonder arbor, out of the heat, and can spare a few minutes, I will try to give you some idea of what this apparatus is for and what has led me to have it constructed in the manner you see."

Our host then led the way to a rustic arbor, where, in the cool shade of the trees, he began the following narrative:

"A large portion of my life has been spent in traveling; in fact, there are few quarters of the globe that I have not visited in my time. Such sojournings, for whatever purpose they may be made, only become interesting when one uses one's faculties of observation in examining and analyzing such objects of interest as may present themselves; in one place it may be the manners and customs of a savage race: in another, some sublime specimen of architecture; in a third, some new form of botanical or insect life—in short, to the observant eye every phase of nature becomes an object of interest. Among other things, the wonderful natural phenomenon known as the mirage had frequently arrested my attention and taxed my ratiocinative faculties to account satisfactorily for its appearance at certain times and in widely varying conditions and forms. The theory laid down in scientific works satisfied me in part but not in whole. The illusive appearance of a lake upon a desert, for instance—the commonest form of mirage—is easily accounted for on a theory that a layer of heated air, near the surface of the earth, acts as a mirror at its plane of junction with a denser stratum superimposed upon it, and reflects the forms of animals, trees or other objects in the field of vision, just as a veritable sheet of water would do. In the same manner, I could reasonably account for the image of an inverted ship, suspended in the air directly above a real one, on an ocean horizon, the point of junction of the differing atmospheric strata being, in this instance, above the ship's masts.

"But this simple and comprehensible process of reflection would not account for the phenomenon known as *looming*, wherein an island at sea, or a bluff on a desert, appears as though but a mile or two off, whereas its true position may be ten times that distance away. I have seen, for instance, the city of Melbourne as though but a few miles off, when it was actually out of sight below the horizon. Still less would this hypothesis account for such scenes as I have witnessed on the Nubian Desert—cool, limpid pools of water, fringed by green, waving palms, with camels browsing in the shade, the veritable reproduction of an oasis which I afterwards reached and recognized, and which was then nearly two hundred miles away. More than this, upon the same desert, I have seen the city of Damascus, with its sparkling buildings, rich corn-fields, and blooming orchards, spread out before me as vividly and distinctly as I have seen it from the eastern slope of Anti-Libanus, though in a bee-line it was at least a thousand miles away.

"Imagination, you will say? The effect of intense heat upon a strained nervous system? Physiologically plausible under such conditions, I admit, but not in another I can name. In July, 1866, from a window in my residence in Chicago, I saw the city of Grand Rapids, Mich., projected above the waters of the lake so clearly that I could distinguish streets and public buildings, though one hundred and thirty miles of water and land separated the one city from the other. Not only was this spectacle witnessed by myself but by thousands more. So much public interest and comment did it excite, that it formed the basis for a number of scientific articles in the local publications of the day.

"But to come to the point where, in my case, hypothesis ended and practical knowledge began, in the matter of accounting for this apparent annihilation of distance and upsetting of known optical laws and existing theories regarding the transmission of light, I must give you an account of my recent experience on the Mojave Desert—an experience which has led directly to the construction of the apparatus you have just seen and to the experiments I am about to institute.

(*Concluded next week.*)

LAGER BEER.

HOW GAMBRINUS BECAME ITS TUTELARY DEITY.

The first mention that history makes of beer brewing, as being carried on in a professional way, was in the year 812 A. D., at the time of Charles the Great, who, among other industries, fostered that of the brewing of beer. Before that time none but distinguished citizens had the right and privilege to brew, which right was inherited from father to son. It is pleasing to know that in those "good old times" the lady of the house attended to the beer for the household with as much interest as our present housewives give to coffee for our breakfast tables. In the division of an estate, all brewing utensils, etc., rightly belonged to the lady of the house. Later on brew houses were built in every town, and every family had certain days appointed for them in which to do their brewing in this rather of a "co-operative" brew house. At that time, which was in the ninth century, the monks took particular interest in the brewing of their beer. Those monks always managed to live well. They had a supply of everything that was good, and they particularly enjoyed a mug of beer of their own brewing. It was in the ninth century also when beer was first offered for sale as an article of commerce. As a rule, it was sold at the inns, where the people gathered before and after the church services, to enjoy themselves around the tables. (We should have mentioned the fact that the inauguration of beer selling in Germany was at the church festivals which frequently occurred, and at which were gathered people from far and near to see the sights so to speak.) It seemed to be the calling of those ancient bishops and monks to teach the art of beer brewing as well as Christianity, in fact these were the first professional brewers known. In 816 A. D., when the convent of St. Gall was rebuilt, it was found that, on the same premises, there was a large brewery with all the improvements (known at the time), such as malt kilns, brew house, cooling room, etc., even a thoroughly constructed cooper shop. It was in this convent brewery that hops were first used in the manufacture of beer. Under Charles the Great, the brewing industry, and in fact all mechanical industries received a great impetus, and continued rapidly to advance in importance, so that by the eleventh century the brewers of Bremen were exporting, and one could get Braunschweig, Halberstadt, Gosler, Stade, or Bremen beer on draft in Bremen, which goes to show the great advance the industry made in its infancy. Bremen beer, however, was considered everywhere to be the best; such beers as Muenchen, Weiner and Pilsner, being unknown in those days. But the royalty still seemed to cling to the old way of brewing their own, as every royal residence was fitted up with a complete brewery, which was considered as important as other necessary buildings, such as the stables, prisons, etc. The castle of Wartburg, built in 1067–1075, had on its premises a brewery 50 x 30 feet; Koeln (Cologne) had over 600 wealthy merchants exporting to England, Norway, and the Netherlands, beer and wine being the principal articles shipped. In 1146; Bavaria granted its first brewing privilege to the convent of Weidenstapen; their hops had to be imported from Klattau. In less than no time large cities came into existence throughout Germany, such as Nuremberg, Constanz, Wien, Breslau, Bernau, Berlin, Zittau, Erfurt, Worms, Aachen, Metz, Frankfurt, Sachenhausen, Regensburg, and many others; in all of these brewing was one of the largest industries, and beer was sold and exported in large quantities, at the price of one pfennig (one quarter of a cent) per maas (about one quart). Up to 1259 brewing was carried on by parties who were engaged in other pursuits as well; but the first man to engage himself exclusively in the business was "Arnold the Brewer," who, in 1259, located his business in Strasburg. In 1290 the authorities of Nuremberg passed an ordinance that beer must be brewed from hops and barley only, no other grain to be used; but adulterations were readily practiced, though the offenders were severely punished. Take, for instance, the law passed by the authorities of Aachen: "All men brewing or selling beer shall pay a certain tax and shall brew their beer from hops and barley only; whoever shall neglect to obey this law, if proven guilty, shall have his right hand cut off and shall not be permitted to live within the limits of the city for five years after sentence, and the house where such illegal beer has been brewed or sold shall be destroyed at once." For many years later the adulteration of beer was punished by cutting off limbs from the body of the offender, or by destroying of the sight with irons at a white heat. In Breslau all hops to be used for brewing purposes had to be duly inspected by the authorities, and the mixing of poor with good qualities was severely punished by law, even as far back as the thirteenth century. It was at about that time the brewers' guardian angel (Gambrinus) came to light. Gambrinus (his right name being Johann I.) was born in 1251, and was the son of Henry III. of Germany. The Latin name of Johann I. being Janprinus, and as all documents were recorded in that language, he was generally called Gambrinus. All the brewers' societies then in existence chose him as their "guardian angel," as he gave them full freedom throughout the land and fostered the industry in many ways. His picture or statue can be seen in almost every brewery at the present time, as he is the recognized god of "Lager."—*N. E. Exchange.*

BATHING IN PARIS.

HOW THE AVERAGE FRENCHMAN MAKES HIS ABLUTIONS.

An American familiar with the fact that every house or apartment renting as low as $300 per year in the United States has its own bath tub, with hot and cold water supply and waste to remove the contents of the tub, is amused if not amazed when, on a visit to Paris, he gets an idea of the custom still prevailing in that metropolis of luxury and elegant buildings. The large hotels, some very costly private mansions and apartments, and the public bath-houses have their bath-rooms, as is the custom in the United States, though the French bath-room is usually much larger and is elegantly furnished with rugs, lounges and dressing tables, etc., the idea being that if one takes a bath one must lie down and take a nap after it. People living in apartments costing as high as $1,000 a year, and in the new quarter of Paris in the neighborhood of the Champs Elysees, when they wish to bathe other than take a sponge bath in a small portable tub, either go to the public bathing establishments or send to them to have a bath brought to their apartments. Sunday morning one sees a strange-looking, two-wheeled cart, like a very high dog-cart, on which there is a framework built over the wheels. This framework can hold three bath tubs. They are made entirely of copper, and are about five feet long, about twenty inches deep at the end, and eighteen inches on the side. The driver of this vehicle is perched up high on a small seat in front, is bareheaded and wears a blouse. On each side of him an iron ring encircles a copper-colored vessel holding about three gallons of hot water which rests on a little shelf. He also carries a supply of dry towels and sheets. The bathing establishments have these carts, and when a patron sends word that he wants a hot bath at a certain hour the bath is put on the cart, the kettle filled with hot water, and the cart with its strange load is rapidly driven to the building in which the apartment is. The driver carries the bath tub, as an Adirondack guide carries a canoe, on his head and shoulders, from the first to the fifth floor as the case may be, and after spreading a sheet to protect the carpet he spreads also a clean sheet inside of the tub, so that the bather does not touch the metal. Then he carries up the kettle of hot water which he has brought from the main establishment. The necessary cold water he gets on the premises. The charge for this is about sixty cents, with the usual additional tip to the man.

ASTRONOMICAL CONJECTURES.

A BRIEF SPECULATION ON THE MOTION OF THE STARS.

The Pleiades are visibly a group. Throughout ancient history they are represented as seven stars, wanting one. In our own day that small square of sky space over which this cluster of half a dozen is scattered, has been found to be occupied by many more than 2,000 suns. The distance of the group from us is estimated as at least 1,500,000,000 miles, and it is estimated that Alcyone, the chief of its stars, must a thousand times excel our own sun in brilliancy. Now, in regard to this goodly company, there is evidence that the majority have an apparent motion in common. But that which is true of most of this wonderful crowd of worlds is not true of all the individuals that at first seem to belong to it. A few are found to lag behind, while two at least hurry on in advance of the general progress. These sets, then, do not in fact belong to the cluster, but, being situated far beyond or far in front, take their places in the same apparent plane only through the effect of perspective. The question may naturally be asked, What can produce this appearance of motion either in the stars of the group or in the stars before and behind it? It must be produced by reality of motion somewhere, either on the part of the stars themselves or else of another star, the sun with which we are ourselves identified, or else on the part of both combined. It is obvious that if our solar system is in motion, the other solar systems of the sky are likely to be in motion also, and *vice versa*. Thus we might expect that the apparent movements referred to would be a mixed result, and this is found to be the case. The displacements of the stars are analyzed into what is called "the *motus parallacticus* optically transferred to the whole stellar multitude from the single real motion of the sun, and the *motus peculiaris* belonging to each individual star."

Slowly, as slowness is counted in celestial things, our sun is moving towards such and such a point in the heavens. This inference is drawn from the fact that thousands of variously situated stars are found to have a drift in the opposite direction. But this drift does not account for the whole of their movements and when that part of the movement which is common to all has been subtracted, the residuum, in whatever direction it may happen to be for each, is set to the account of the star's own progression.—*The Edinburgh Review.*

DEEP WELL.—An artesian well 3,095 feet in depth has been sunk at Ashland, Wis., at a cost of $14,000. After the first 175 feet it passes through brown sandstone.

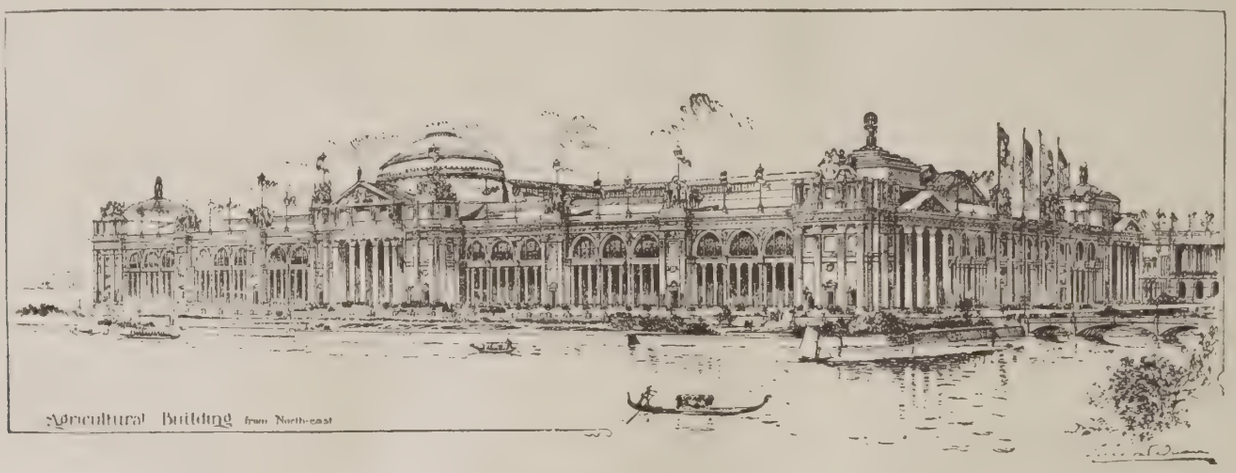
PNEUMATIC SOLES.—A pneumatic inner sole or sock for boots and shoes has been brought out to confer great benefits upon people who have tender feet, etc. It is made of hollow India-rubber, inflated with air or gas under pressure, the external protective covering being canvas, linen, skin, or other suitable material, to adopt it to withstand the internal pressure of the compressed air or gas.—*Invention, London.*

FLASH LIGHT.—Many uses have been proposed for aluminum, and in some instances this metal has been brought into actual use. One of its latest applications is in the making of photographic flash lights in the place of magnesium. A mixture of powdered aluminum and chloride of potash is said to give a brilliant flash without the smoke that is produced by magnesium, and this quality is in itself a strong recommendation.

THE COLUMBIAN EXPOSITION.

THE AGRICULTURAL AND ELECTRICAL BUILDINGS.

We continue, for the edification of THE AMERICAN ANALYST'S readers, the illustrations of the buildings now in progress for the Columbian Exposition in Chicago in 1893. With the exception of the Administration building, the Agricultural building will be the most magnificent structure on the exposition grounds. In size it is 800 by 500 feet, severely classic in style.



THE AGRICULTURAL BUILDING.

It is almost surrounded by lagoons. The features of this building are its five pavilions—one at each corner and one in the centre. The corner pavilions are 64 by 48 feet. The grand entrance is on the north. It is 60 feet wide, leading into a vestibule 30 feet deep and 60 feet wide. At the entrance are Corinthian columns 5 feet in diameter and 40 feet high. Beyond these massive columns is the rotunda, 100 feet in diameter, surmounted by a glass dome 130 feet high. There are 8 minor entrances, 20 feet wide. The roof will be principally of glass. The Electrical building covers a space of 700 by 350 feet, or more than five and one half acres. Like most of the other buildings, the style of architecture is Italian renaissance. It is 60 feet high, and ornamented with designs suggestive of the department. It is one of the handsomest of the grand central group, and will cost $650,000. There will be four entrances to the building, the main one on the south. It will be built of a material resembling granite in color. A statue of Franklin will rise conspicuously before the south entrance.



THE ELECTRICAL BUILDING.

WORLD'S FAIR NOTES.

The Royal Agricultural and Commercial Society of British Guiana has decided to hold a local exhibition of its resources preliminary to the display it intends making at Chicago.

The imitation battleship *Illinois*, at the naval pier, in the Exposition grounds, is now rising from the water. Work is progressing satisfactorily on the hull. The deck will measure over all 348 by 69¾ feet. This structure is to cost $100,000, and is the most original illustration of naval architecture ever worked out. We illustrated it last week.

A company has been formed, embracing several very wealthy men, to inaugurate and operate in Chicago a permanent circus, after the style of the Hippodrome, in Paris. A building with seating capacity of 5,000, and having a garden on the roof, will be erected, and the attraction will be in operation to entertain World's Fair crowds.

Charles W. Rolfe, of the Illinois University, at Champaign, has been elected to take charge of the relief map of Illinois, which is to be a part of the State exhibit. He will be assisted by a corps of ten engineers, who will go in the field soon. The map is to be made on a scale of one inch to three miles. It will be six by ten feet, and cost $15,000.

One of the largest bicycle factories in America has written to Chief Smith, of the Transportation Department, that it will exhibit at the Fair "bicycles and tricycles of every style of the trade, showing the rise and progress of the art of making 'wheels,' from the first 'bone shaker' built in this country up to the highly finished 'safety' of the present day."

Chief Ives, of the Art Department, now in Europe, writes most encouragingly concerning the prospects of the art exhibit at the Exposition. He has conferred with artists and art societies in many of the principal cities of Europe, and has found them greatly interested in the Exposition, and anxious to send paintings and other art productions for exhibition. He reports his success much greater than he anticipated.

A stock company, with a capital of $100,000, has been formed, to place a paper exhibit at the Columbian Exposition. Every American paper maker or American manufacturer of paper making machinery will be allowed to take stock. The entire capital has already been secured, but the pledges will not be called for until the outsiders have been given a chance, in order to do away with any idea of a money-making scheme. A committee of five has been appointed by President M. J. Fitch to take the matter in hand, and to send a representative to the meeting of the Boston Paper Trade Club, the third Wednesday in November.

All of the restaurants in the Mines and Mining and Electricity buildings will be in the galleries. This was determined in order to leave the ground floor free, as far as may be, for intending exhibitors. It is thought, also, that restaurants on the second floors of the building would prove an attractive feature. It was also decided that the restaurants in the Electricity building be located in the two bays at the north end of the hall. In each bay there is to be one large dining-room, surrounded by several smaller rooms twenty-three feet square. The balcony connecting the two is to be fitted up for serving temperance drinks and ices. In the great Manufactures building about 40,000 square feet have been set apart for restaurants.

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

November.

MEATS.—Beef, mutton, pork, venison.

POULTRY AND GAME.—Chicken, duck, geese, grouse, hare, partridge, pheasant, pigeons, rabbits, turkeys, widgeon, wild ducks, woodcock.

FISH.—Brill, carp, cod, whiting, salmon trout, perch, smelts, oysters.

VEGETABLES.—Artichokes, broccoli, celery, potatoes, turnips, cauliflower, cabbage, carrots.

FRUITS.—Apples, pears, quinces, grapes, nuts.

PRACTICAL RECIPES.

DEVILLED BACON.—Make a dressing of mustard, oil, and red pepper. Cut some breakfast bacon into very thin slices, pour the dressing over them and fry.

COCOANUT BLANC MANGE.—Put one half pound cocoanut to soak in three pints milk for half an hour. Soak three large tablespoonfuls of gelatine in six tablespoonfuls of water and when soft add the milk and cocoanut and a teacup of sugar and boil for a few minutes, then flavor with a little grated lemon rind or vanilla; pour in a mould and set away to stiffen.

RICE CREAM.—Boil one cup of rice in milk until it is soft, adding to it two tablespoonfuls of sugar and one quarter teaspoon of salt. Pour it into a glass dish and when cool put lumps of currant or other jelly over it, make a meringue of the whites of five eggs beaten to a stiff froth, sweetened with three tablespoonfuls of powdered sugar, flavored with vanilla or lemon and a large tablespoonful of very rich cream beaten in. Spread this over the rice and serve.

CUP PUDDINGS.—Beat together the whites of five eggs well beaten, one cup of very rich cream, one teacup of sugar, one teaspoonful of baking powder and sufficient flour to make a cake batter, and a little salt. Bake in buttered stone-china cups in a moderate oven; when done loosen from the sides of the cups with a thin, sharp knife and serve on a napkin with hard sauce.

VENISON STEAK.—Cut a thick steak from the leg, rub in oil or butter and broil it, then lay it on a hot dish, squeeze a little lemon juice over and serve with the following sauce: Reduce a gallon of strong soup to a quart by long boiling, and keep it warm. Beat up the yolks of four eggs, turn them into a buttered saucepan, whisk them, and gradually add a pint of the reduced soup; add, while whisking, a tablespoonful of vinegar strongly flavored with garlic (or, if liked, a quantity of the juice from bruised garlic or shallots), and the juice of a lemon. After beating the eggs stir them in the pan continually with a wooden spoon, and do not let the sauce boil at any time: when smooth serve. A few mushrooms may be added to the sauce if desired.

BREAD PUDDING.—Beat up one quarter of a pound sugar with one quarter pound of butter and four eggs yolks, then add one quarter pound of very fine dry bread crumbs, beat up the whites of the eggs very light and add them; then bake and serve with a cream sauce.

HORSERADISH SAUCE.—Rub the yolks of two hard boiled eggs quite smooth with a little vinegar, then add equal quantities of thick cream and salad oil, a little sugar, salt and pepper. Have ready a stick of grated horseradish which add to the mixture and add lemon juice or more vinegar to taste. Serve with fish or cold meats.

MUSTARD.

Every one thinks that he knows what mustard is; nearly every one has seen jars, cans or boxes labelled mustard at the grocer's and druggist's, and many who may never have used the article as a condiment have had a far more unpleasant experience with it in the shape of a mustard emetic or plaster. Yet, if the truth is told, very few know anything about that much employed and valuable article. Mustard, as it is generally sold, is a fine powder made by pounding or grinding mustard-seed produced from several different species of the cruciferous genus *Brassica*. Of these the principal are the black or brown mustard, the white mustard, and the Sarepta mustard. A very fine quality of both the black and white mustard are cultivated in the Eastern counties of England. The black mustard is a plant requiring a very rich soil, and much care in its treatment. The seeds, which are very minute, weighing not more than one-fiftieth of a grain, are the most valuable. The peculiar pungency and odor to which mustard owes much of its value are due to an essential oil, developed by the action of water on two peculiar chemical substances contained in the black seed. These bodies are a compound termed by its discoverers myronate of potassium, but since called sinigrin $C_{10}\ H_{18}\ Kns_2\ O_{10}$, and an albuminoid body, myrosin. The latter substance, in the presence of water, acts as a ferment on sinigrin, splitting it up into the essential oil of mustard, a potassium salt and sugar. As this reaction does not take place in the presence of boiling water, it is not proper to use very warm water in the preparation of mustard. The seed of white mustard contains, in place of sinigrin, a peculiar principle called sinalbin, $C_{30}\ H_{44}\ N_2\ S_2\ O_{16}$. This, in presence of water, is acted upon by myrosin, which is also present in white mustard, splitting it up into sulphocyanate of acrinyl, sulphate of sinapine and sugar. This sulphocyanate of acrinyl is a powerful rubefacient principle, whence white mustard, although yielding no volatile oil, forms a valuable material for mustard poultices. The seeds of the Sarepta mustard, which is extensively cultivated in Russia and the East Indies, have the same constitution and properties as black mustard. Both as a table condiment and in medicine mustard has been used from the remotest antiquity. It was known by Hippocrates. The form in which table mustard is now sold dates from 1720, at which time Mrs. Clements of Durham hit on the idea of grinding the seeds in a mill, and sifting the flour from the husk. The bright yellow mustard flour thus produced, under the name of "Durham Mustard," pleased the taste of George I., and rapidly attained wide popularity. As now prepared for commercial purposes mustard consists of a mixture of the black and white mustard flour in varying proportions, and with more or less admixture of wheaten and buckwheat flour. This is partly done to make it keep better, and partly to overcome the unmitigated bitterness and sharpness of flavor of pure mustard. Some of these mixtures are honest enough in their intention, but being handled by inexperienced manufacturers, nearly always come short of their purpose. A great deal of dishonest adulteration is also resorted to, so much so that chemical analysis has shown that hardly ten per cent. of all the mustard sold in the market is free from adulteration. All varieties of mustard-seed contain from 25 to 35 per cent. of a bland inodorous yellow-colored fixed oil, free from pungency, and with little tendency to become rancid. It is extensively used for cooking and all ordinary purposes. The mustard papers commonly used as rubefacients and vesicants are made from mustard flour entirely deprived of its fixed oil. One of the descendants of Mrs. Clements of Durham was J. D. Herron, who was carrying on an extensive mustard factory in London as far back as 1830. About the year 1852 he sold out his business and emigrated to the United States, to open a large house. On his arrival he met Mr. William G. Dean, the present head of the firm of William G. Dean & Son. This acquaintance led to a partnership for the manufacture of mustard by the old English process, which had been so successful in Europe. As usual, Yankee ingenuity quickly mastered the subject, until improvement after improvement, under many patents, have enabled Mr. Dean's inventive genius to manufacture a mustard which, while it keeps in all climates, has none of the drawbacks possessed by all other mustards, and have justly led to its general adoption in every part of this country. The trade-mark name selected by Mr. Dean is as novel and well adapted as his mustard is superior to all others. Mustard should be ardent, and Mr. Dean's best mustard, therefore, is "Ardenter." Mr. Herron died, and Mr. Dean bought out his widow's interest, and ever since has conducted the business with the aid of his son, who is his partner, under the firm name of William G. Dean & Son. They are now located in an immense building at the corner of Washington and North Moore Streets, but are already crowded for room and looking about for a still larger building, to enable them to fill their orders, which are always from one to three months behind. The head of the firm personally superintends the factory and office, while the son is the popular salesman, and supervises the corps of salesmen employed. In every competition this firm has always been awarded the first prizes. The Government, after several careful analyses of the various mustards in the market, are among Mr. Dean's largest customers. This brand is well known by every jobber and wholesale grocer, and there can be but very few grocery stores encountered now where the "Ardenter" cannot be found, because when the "Ardenter" once becomes known, consumers will take no other brand. Messrs. Dean also make other brands and qualities of mustard to suit all trades The only other article manufactured by them is licorice; they are, therefore, undoubtedly the largest mustard manufacturers in this country if not in the world.

ON GETTING YOUR FEET WET.

A feature of civilized life is running to extremes. The average man in trying to avoid one evil goes as far in the opposite direction as to fall into another and a worse one. To avoid the generally unavoidable experience of getting the feet wet in rainy or snowy weather, we cover the feet with rubbers, arctics, and the like. These do harm when worn for any length of time. They heat the tissues of the inferior extremities and draw the blood to that part of the body until every vessel is distended. People must realize that the feet need ventilation and a cool temperature. The most beautiful feet and ankles of the world are those of the Irish peasant girl, the Egyptian water carrier, the Spanish vineyard laborer and the Italian shepherdess—none of whom ever touched a shoe or a stocking. But is there no danger of cough, cold or other ill? There ought to be none, and there would be none if people were healthy. But they are not healthy and getting the feet wet is too often the door by which disease enters. Yet it is not the wetting which causes the cold. Miners work all day in wet shafts and galleries; sailors in stormy voyages are never dry an hour during weeks; country boys play in the rain and snow as merrily as in the sunshine; all these classes are strong and vigorous. Any one whose system is in splendid condition can walk with his boots full of water or run bare-footed through the snow without taking cold or showing other ill consequences. Catching cold shows that the body is in poor condition. Any one who takes cold under such circumstances or who is fearful of it needs a renovation of the physical system. The humors require expulsion, the tissues purification, and the vital functions invigoration. Hot baths according to the person's strength; a cup of boiling water to be drunk by aid of a tablespoon on rising in the morning; a liberal use of fruits and such vegetables as the tomato, green pea, onion and lettuce; all these are of the highest value for the cleansing of the system, pores and bowels. But to

properly purify the tissues and revivify the vital functions can best be accomplished by a slow and steady treatment with Ayer's Sarsaparilla. When introduced into the stomach, it is promptly absorbed by the lacteals and poured into the blood. Here it begins its labors by attacking foreign bodies and decayed molecules; from the blood it enters the great organs and when, as is nearly always the case, these are sluggish, it stimulates them to normal action and efficiency. In this wise it completes the work started and going on in the circulation. According to the condition of the sufferer's system, the restoration to health is slow or rapid. The greater the ailment the slower the cure. When the system is again in full strength and vigor, it makes no difference whether your feet are wet or dry, cold or warm. You catch no cold under any circumstance. As a matter of economy and convenience, not to speak of comfort and physical well-being, Ayer's Sarsaparilla is better, cheaper, pleasanter and wiser than all the galoshes and waterproofs of modern civilization

BUSINESS NOTES.

HORSFORD'S ACID PHOSPHATE

Relieves Mental and Physical Exhaustion. Dr. W. C. HANSCOME, Minneapolis, Minn, says: "I used it in a case of acute rheumatism, during convalescence: the particular symptoms I wished to relieve were sleeplessness and nervousness, and the results were all I desired."

NORTHERN LIGHTS.—The theory of the light of the aurora borealis was evolved from the analysis of its light by the spectroscope, which showed that it was caused by electrical discharges among the particles of meteoric dust in the atmosphere. The broad red line of the spectrum of iron is shown in all these cases and thus upholds the theory, as it is well known that the principal part of meteors is metallic iron.

A Tonic

Horsford's Acid Phosphate.

A most excellant and agreeable tonic and appetizer. It nourishes and invigorates the tired brain and body, imparts renewed energy and vitality, and enlivens the functions.

Dr. EPHRAIM BATEMAN, Cedarville, N. J., sasy:

"I have used it for several years, not only in my practice, but in my own individual case, and consider it under all circumstances one of the best nerve tonics that we possess. For mental exhaustion or overwork it gives renewed strength and vigor to the entire system."

Descriptive pamphlet free.

Rumford Chemical Works, Providence, R. I.

Beware of Substitutes and Imitations.

CAUTION:—Be sure the word "Horsford's" is on the label. All others are spurious. Never sold in bulk.

THE TOMATO.—No vegetable has undergone a greater development in the last generation than the tomato. Persons who still esteem themselves young will remember the time when the only tomatoes to be seen were the small round or oval ones called love apples and deemed inedible. They seem to have been appropriated for table use first in this country, for an old European traveller tells how he astonished his fellow diners at a continental table d'hôte by eating the tomatoes placed on the table purely as garniture.

AS SHE IS SPOKE.—Europen hotel-keepers are, as a rule, not proficients in the English language—to put the matter mildly. Perhaps the greatest sinners are the Swiss landlords, who perpetrate some choice blunders. A delicious example of "English as she is wrote" may be seen and laughed at in a hotel on the Rigi:—"Misters the venerable voyagers are advertised that when the sun him rise a horn will be blowed." That announcement sufficiently prepares the visitor for the following entry in the wine list:—"In this hotel the wines leave the traveler nothing to hope for."

THE LABRADOR FALLS.—Canadian explorers have claimed that Labrador had a fall 2,000 feet high on Grand River. The Bowdoin College Labrador exploration party report a visit to the falls in July, in which they say that the Grand River Falls measure 200 feet, and that the rapids leading to it increase the total to 500 feet. Above the falls the average width of the river is 500 yards, narrowing until it reaches the falls to a width of only fifty yards, when it plunges with a terrific roar over the rapids and falls into the narrow gorge below. This report leaves the Yosemite Falls ahead for height and Niagara Falls ahead for sublimity.

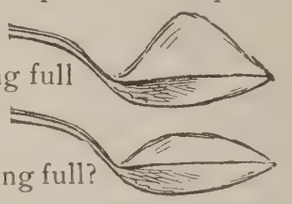
ORIGIN OF MENUS.—The use of the menu dates back to 1489. According to a German gastronomical publication, the Elector Henry of Braunschweig attracted general notice at a State dinner in Regensburg by referring to a long paper before him every time he ordered a dish. The English Earl of Montfort sat near, and asked the Elector what he was reading. The Elector passed the paper to his questioner, and it proved to be a list of the viands prepared for the occasion, which the cook had been induced to write out. The idea so pleased the company that each introduced it into his own household, and so the practice spread over the civilized world.

ADVERTISERS' WARNING.—Here is a point for advertisers. The manufacturers of a condiment of world-wide fame, who had been spending as much as $25,000 a year on advertisements with one London agency, suddenly decided that, as their product was on every table, this outlay might be saved. All orders and contracts were accordingly stopped; but with what result? Trade declined so quickly that to recover lost ground the firm are now spending twice $25,000 a year. It is a fact that wholesale houses reduce their orders to manufacturers when they find the latter diminishing their advertisements, because experience teaches them that the public demand for an article falls off as the advertisements disappear.—*London Caterer.*

SOUND ADVICE.—Every young man to have a home must have a wife. He can never substitute a boarding-place, a club, or hotel for a home. This is to go through life hanging upon the skirts of life, leading a joyless, selfish, unnatural, and unpatriotic existence. God putteth the solitary in families. It is the best provision He can make for their usefulness and welfare. This divine arrangement cannot be set aside, or improved upon, or written down as a "failure." Young men and women are still to marry, build homes, rear families, plant gardens, and eat the fruit of them, marry when young, even though poor, join hands and hearts, and climb the hill together; they will reach the summit all the more surely and quickly.—*New England Magazine* for November.

PRODUCTIVE WELL.—The drillers engaged in sinking a well for the Natatorium at Fort Worth, Tex., struck a flow of water which excels that of any artesian well known. The flow is 600 gallons per minute and is as clear as crystal. The well is 1,052 feet deep, with a 10-inch bore at the top, tapering to five inches at the bottom. Fort Worth can boast of the largest flowing well in existence. the largest hitherto known being at Bourne, Lincolnshire, England, which discharges 500,000 gallons daily. At Aire, in the province of Artois, France, from which province is derived the name of artesian wells, there is a well from which the water has continued to flow for more than a century, and at the old Carthusian convent at Lillers, there is another which dates from the twelfth century.

Is a spoonful a spoon



heaping full

or

rounding full?

One rounded teaspoonful of Cleveland's Baking Powder does as much work as a heaping teaspoonful of others; quite a saving on a year's bakings.

Cleveland's leavens *most* and leavens best. Try it.

EVERY one in need of information on the subject of advertising will do well to obtain a copy of "Book for Advertisers," 368 pages, price one dollar. Mailed, postage paid, on receipt of price. Contains a careful compilation from the American Newspaper Directory of all the best papers and class journals; gives the circulation rating of every one, and a good deal of information about rates and other matters pertaining to the business of advertising. Address

ROWELL'S ADVERTISING BUREAU,
10 Spruce St., New York.

Fine Table Wines

From our Celebrated Orleans Vineyard.

Arpad Haraszthy & Co.

Producers of the

ECLIPSE

CHAMPAGNE,

530 Washington St.

SAN FRANCISCO.

GENERAL AGENCIES:

NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOSEPH H. PEBBLES' SONS CO., 73 West Fourth Street.
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.

PURE PEPSIN

In Powder and Scale.

MANUFACTURED BY

ARMOUR & COMPANY, Chicago.

Guaranteed free from adulteration or make-weights: of excellent physical properties and high digestive power.

Under similar conditions, **ARMOUR'S PEPSIN** will exhibit greater activity than any other pepsin now before the profession.

The Manufacturers will be pleased to supply members of the Medical Profession with samples of their pepsin, and with full details regarding digestive strength, if desired.

GRANT.

SHERMAN.

SHERIDAN.

McCLELLAN.

GEN. GRANT'S MEMOIRS.

Original $7 Edition for 30 Cents.

NO book, excepting the Bible, has ever had such a sale in the United States as General Grant's Memoirs. 650,000 copies have already gone into the homes of the rich, but the subscription price of $7.00 has placed it beyond the reach of people in moderate circumstances. **If 650,000 people have been willing to pay $7.00 for Grant's Memoirs, there must be a couple of million people in the United States who want them, and will jump at the opportunity** to buy them at the low figure here offered.

We will send you General Grant's Memoirs, publisher's original edition, best paper, cloth, green and gold binding, hitherto sold by subscription at $7.00,

FOR 30 CENTS!—FOR 30 CENTS!—ABSOLUTELY ONLY 30 CENTS!

and absolutely a proposition such as has never been made in the history of book publishing. The two splendid volumes of Grant's Memoirs, of which 650,000 copies have been already sold—not a cheap edition, but the best—for 30 cents; provided you send your subscription of $1.00 to the **AMERICAN ANALYST** one year, and also a subscription of $3.00 for the **COSMOPOLITAN MAGAZINE,** the brightest and cheapest of the great illustrated monthlies, itself equal to the best $4.00 magazine.

The **COSMOPOLITAN** is enabled to make this offer because of **the purchase of 600,000 volumes at a price which even publishers would deem impossible, and with the idea of running up its circulation to half a million copies.** By contract with the **COSMOPOLITAN,** and at no profit to us, we are enabled to offer our readers a share in the low price obtained through the largest purchase of books ever made in the history of the world.

If, however, you have Grant's books, our offer will permit you to take instead,

GEN. SHERMAN'S MEMOIRS, 2 Vols., sold by subscription for $5.00
GEN. SHERIDAN'S MEMOIRS, 2 Vols., sold by subscription for 6.00
GEN. McCLELLAN'S MEMOIRS, sold by subscription for . . 3.75

All of these are bound in cloth, green and gold, in uniform style with Grant's Memoirs.

Send us at once $3.00 for year's subscription to the **COSMOPOLITAN,** $1.00 for year's subscription to the **AMERICAN ANALYST,** and 30 cents for a set of Memoirs—$4.30 in all—to which add postage on the particular set of Memoirs selected.

WHY DO WE MAKE THESE GRAND OFFERS?

Simply because we want every intelligent family to keep well informed as to the popular science of this progressive era. We publish the **only popular journal on this subject—THE AMERICAN ANALYST.** Its subscription list is already very large; but we want at least **Fifty Thousand additional subscribers before January 1, 1892.** We know that, if we shall get them, we shall be able to hold most of them as permanent readers of our periodical. So at present sacrifice and at great cost, we have entered into a combination. The **COSMOPOLITAN** is the brightest and cheapest of the great illustrated monthly magazines; it gives annually 1,536 pages by the ablest writers, and over 1,200 illustrations by the ablest artists; and is just as interesting to the young boy or girl as to the oldest grey head. Now, then, we ask you to send us merely $4.30, and, on receipt of same, we will mail them to you regularly for **one year,** and will also send you (making no charge for the books) a set of **GENERAL GRANT'S MEMOIRS,** or either of the other works that you may select. **NO SUCH OFFER AS THIS WAS EVER MADE BEFORE BY ANY PUBLISHER SINCE TIME BEGAN!**

UNLESS OTHERWISE DIRECTED,

we shall invariably ship the books by express, charges to be paid by the receiver. If you wish the volumes forwarded by mail, you must distinctly say so at the time when you send us your address and the Money; and you must also enclose postage to prepay the packages at the following rates: **GRANT'S MEMOIRS,** 96 ozs., 48c.; **SHERMAN'S MEMOIRS,** 92 ozs., 46c.; **SHERIDAN'S MEMOIRS,** 84 ozs., 42c.; **McCLELLAN'S MEMOIRS,** 48 ozs., 24c. The government rate for postage on books is one-half cent per ounce. The **COSMOPOLITAN** and **AMERICAN ANALYST** are sent to subscribers free of postage.

SEND ALL ORDERS ADDRESSED

THE ANALYST PUBLISHING CO.,

19 Park Place, New York.

CONFEDERATE MONEY.

Warranted Genuine and in Good Condition.

We are extensive dealers in Confederate Money—rare relics of our late civil war; also Bullets, Cannon Balls, etc. We want agents in every city North to sell these mementoes, and we will pay agents handsomely to sell our goods. We will furnish the money to those desiring at the following retail prices: Shinplasters, 10, 25, 50 and 75 cents each, or the entire set 50 cents. Complete sets, consisting of $100, $50, $20, $10, $5, $2, $1, 50c., $1 per set. $500 bills, $2 50 each. $100 bills, 15 cents, or two for 25 cents. $50 bills, 10 cents, or two for 15 cents. $5 and $20, 5 cents each. 50c., $1 and $2, 25 cents each. Inquirers enclose stamp for reply.

Publishers of SOUTHERN AGENT, Atlanta, Ga.

LITTLE BOYS AND GIRLS

MAKE EASILY $2 A DAY.

Write for particulars. Address

BARKER PUBLISHING COMPANY, Atlanta, Ga.





"*Printers' Ink*," that great authority on advertising, says, "A well-made advertisement placed in a humorous paper is like a well-made hat. It wears well." "Results are often obtained after your advertisement has been discontinued for months. A humorous paper never dies. It is read and re-read by all the members of a family, and visitors find pleasure in perusing its columns."

WHY NOT

—OWN AN ILLUSTRATED NEWSPAPER—

TO ADVERTISE YOUR BUSINESS?

Did you know it could be done at moderate cost? Particulars and samples of humorous papers free to any responsible firm. **PICTORIAL WEEKLIES CO.**
28 West 23d Street, New York.

Mr. Gibbs, of the National Cash Register Co., says since publishing their own paper "The Hustler," their business has increased 300 per cent.

"BILLET"

are

Carefully Selected

French Sardines,

Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS.

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

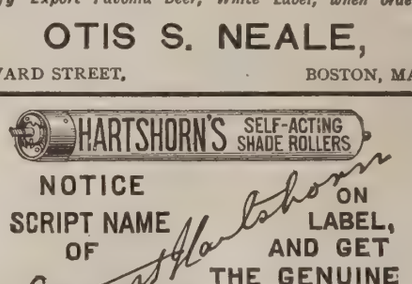
ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,

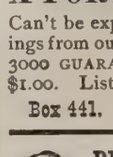
HOWARD STREET, BOSTON, MASS.



A FORTUNE IN A FORTNIGHT!

Can't be expected, but thousands are making good livings from our FAMOUS TRADE SECRETS; Nearly 3000 GUARANTEED receipts of every business sent for $1.00. List and particulars free.

Box 441. EUREKA PUBLISHING CO., Chicago, Ill.



PRINT YOUR OWN CARDS
PRESS $3.00
Circular Size $8.00 Press for a small newspaper $44.

SAVE MONEY! Make money printing for others! Type setting easy; printed instructions. Send 2 stamps for Catalogue of **Presses, Type, Cards, Paper,** etc., to the Factory.

KELSEY & CO.,
Meriden, Connecticut.

LADY AGENTS WANTED.

I have a medical specialty for ladies use, which is one of the best selling articles in the country. You can make a good income handling it, and at the same time be doing your sex a great benefit. Write me at once for full information and exclusive territory. If you wish a sample sent enclose 12 cents postage. Dr. H. H. Jackson, 103 State Street, Chicago.

We can save you Fifty Dollars when you Build. See



A complete set of Plans to build from, simply state about price of dwelling desired. 25 cts. in stamps. Our book "Beautiful Homes." 25 cts. Our monthly book "The National Builder," 25 cts. Address

The National Builder, Adams Exp. Bldg., Chicago, Ill.

A BUSINESS BENEFIT.

ADVANTAGES TO ADVERTISERS OFFERED BY THE "AMERICAN ANALYST."

It has not the limitations of a daily paper. No one reads yesterday's paper. A monthly lives at least a month, while a weekly is fresh four times a month, and its audience is not limited by geographical lines, but the circulation is all over the United States and Canada.

It contains matters of interest to everyone, especially the ladies of the household, and is, therefore, sure of a careful perusal. Our audiences are intelligent and of the better classes, who have money to spend, and any well worded advertisement in our columns, giving real information, will receive a careful perusal.

Our rates are as low as our circulation affords. Large circulation and original matter cost money and those advertisers who desire to realize these benefits must expect to pay reasonably for them.

Advertisements in our columns are permanent. Most of our subscribers bind their numbers.

Our advertisements are set up in an attractive form, sure to call the attention of the reader.

Anything that our readers want, or for which a demand is to be created, not wholly of a local nature, will pay to advertise with us.

We take only advertisements from legitimate houses of really meritorious goods, and give them all the editorial assistance they deserve; consequently our readers knowing this, have confidence in advertisements contained in our columns.

The fact that we have the best and largest houses in every branch of trade advertising with us, and that they always renew as their seasons arrive, proves beyond a doubt that they have found the AMERICAN ANALYST a good advertising medium. Why should not you?

INSTRUCTIONS TO SUBSCRIBERS.

The **Names of all Subscribers** are registered as soon as received, and paper is always promptly forwarded.

Postage.—The postage to all parts of the United States and Canada is paid by the publisher.

Remittances of small sums may be made with comparative safety in ordinary letters. Sums of one dollar or more must be sent by registered letter or P. O. money order, otherwise we cannot be responsible for same. Silver must not be sent in a letter.

Postage Stamps will be received for the fractional part of a dollar, and in any amount when it is impossible for patrons to procure bills, but you must send one or two-cent stamps only.

SUBSCRIPTIONS.—The AMERICAN ANALYST will be sent one year to any subscriber for ONE DOLLAR. New subscriptions can begin at any time.

We Stop the Paper at the expiration of the time paid for unless a renewal of subscription is received. Those whose subscriptions have expired must not expect to continue to receive the paper unless they send the money to pay for it.

Change of Address.—Subscribers wishing their addresses changed must invariably give their former as well as new address.

Missing Numbers.—It occasionally happens that numbers of our paper sent to subscribers are lost or stolen in the mails. In case you do not receive any number when due, write us a postal card and we will cheerfully forward a duplicate of the missing number.

Most Important of All.—In every letter that you write us, never fail to give your full address, plainly written—name, post-office, County and State.

Address all letters to

THE ANALYST PUBLISHING CO.,
19 Park Place, New York.

TABASCO PEPPER SAUCE,

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced by connoisseurs to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY'S SON,

NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

NATRONA BI-CARBONATE OF SODA.

(ABSOLUTELY PURE.)

The nature of the raw material from which NATRONA BI-CARBONATE OF SODA is made—viz., kryolith, a mineral containing *pure sodium*—insures a purity and uniformity of product which cannot be obtained from any other known material. In making BI-CARB. SODA from any other raw material, the use of sulphuric acid is a necessity, but none is used in any part of the process of making NATRONA BI-CARB.; hence its entire freedom from the slightest trace of arsenic, which is always present in ordinary soda. Its absolute purity and entire freedom from all traces of *sulphate of soda*, common salt and other impurities, render NATRONA BI-CARB. NEARLY TASTELESS, and being bolted through the finest bolting-cloth, insures the finest stage of division.

To these indisputable facts the attention of CONSUMERS of soda is specially called. They are IMPORTANT, and should influence both those who use and those who sell soda, to buy and sell NONE BUT THE BEST.

The NATRONA BI-CARB. Soda is kept in stock by almost every wholesale druggist and grocer throughout the United States, of whom it may be ordered.

Natrona Bi-Carb. Soda is unequaled by any other brand of English or American Manufacture.

PENNA. SALT MANUFACTURING CO.,

NATRONA CHEMICAL WORKS. PHILADELPHIA, PA.

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

ARROWHEAD HOT SPRINGS,

CALIFORNIA.

I MOST respectfully invite physicians of the East to write to me for information concerning this famous Southern California resort. The hot mineral water mud baths, and climate are unequalled in America. Diseases of the throat, lungs, liver, stomach and kidneys, nervous and skin troubles and rheumatism, are the ailments successfully treated. The hotel contains 125 rooms, is first-class, and lighted throughout with incandescent lights. Elevation 2,000 feet. Address,

H. C. ROYER, M. D.,

Arrowhead Springs, San Bernardino Co., California.



GOITRE, or THICK NECK.

I have a positive, speedy, cleanly, harmless and almost inexpensive cure. Come or write to me at 28 Arlington Court, CLEVELAND, Ohio. It is no iodine smear. Cure made permanent.

Dr. J. CASKEY.



RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,

184 Greenwich St., N. Y.

AMERICAN ANALYST CLUB RATES.

WE have made arrangements by which we can furnish to our readers any of the periodicals named below at a club rate, with the AMERICAN ANALYST, at a considerable saving. Should any periodical not mentioned be desired, or several of the journals, drop us a postal card and we will give you a rate promptly. For sample copies address the publishers. Terms strictly cash, in advance.

	Publishers' Price.	Our Price, including AMERICAN ANALYST, One Year.
Arthur's Home Magazine	$1.50	$2.35
Babyhood	2.00	2.50
Century Magazine	4.00	4.50
Christian Herald, N. Y.	1.50	2.00
Christian Union, N. Y.	3.00	3 50
Cosmopolitan Magazine (See our Premium Offer.)	3.00	3.25
Cottage Hearth	1.50	2.00
Current Literature	3.00	3.50
Demorest's Magazine	2 00	2.50
Family Story Paper	3.00	3.25
Farm and Fireside	.50	1.40
Fireside Companion	3.00	3.50
Forum	5.00	5.25
Frank Leslie's Illustrated Newspaper.	4.00	4.50
" " Popular Monthly	3.00	3.50
Garden and Forest	4.00	4.25
Godey's Ladies' Book	2.00	2.50
Golden Days	3.00	3.50
Good Housekeeping	2.40	3.00
Harper's Bazaar	$4.00	$4.50
" Young People	2.00	2.50
" Weekly	4.00	4.25
" Magazine	4.00	4.25
Home Magazine (Mrs. Logan's)	.50	1.25
Judge	5.00	5.00
Ladies' Home Journal	1.00	1.75
Ledger, New York	2.00	2.50
Life	5.00	5.50
Lippincott's Magazine	3.00	3.25
Magazine of American History	5.00	5.00
New York Weekly	3.00	3.50
Our Day, Boston	2.50	3.25
Outing	3.00	3.50
Peterson's Magazine	2.00	2.50
Popular Science Monthly	5.00	5.25
Puck	5.00	5.00
Review of Reviews	2.00	2.75
Scientific American	3.00	3.50
Scribner's Magazine	3.00	3.25
Youth's Companion	1 85	2.50

ADDRESS THE ANALYST PUBLISHING CO., 19 Park Place, New York.

GOLD MEDAL," PARIS, 1878.



W. BAKER & Co.'s
Breakfast
Cocoa

from which the excess of oil has been removed,

Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

IF you wish to advertise anything anywhere at any time write to GEO. P. ROWELL & CO., No. 10 Spruce St., New York.

SWIFT'S

CHOICE

Chicago Dressed Beef

AND

MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,

UNION STOCK YARDS,

CHICAGO, ILLS.

THE ORIGINAL AND GENUINE
(WORCESTERSHIRE SAUCE).



LEA & PERRINS' SAUCE

In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—

Lea & Perrins

Beware of Imitations; see that you get Lea & Perrins'

For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS. NEW YORK.

GLENN'S
SULPHUR
SOAP.

Glenn's Sulphur Soap is the Original and Best combination of its kind, and the one now generally in use. For sale by All Druggists.

BEWARE OF COUNTERFEITS.

Wholesale Depot,

C. N. CRITTENTON,
115 FULTON STREET,
NEW YORK.

The Family Herald,

ISSUED EVERY MONTH,

A CLEAN AND INTERESTING STORY PAPER,

FOR OLD AND YOUNG.

Single Copies, 5c. Twelve Months, 50c.

ADVERTISING RATES.

One page—4 Columns—48 inches,	$40 00
Half page—2 Columns—24 inches,	25 00
One column—12 inches,	15 00
Half column—6 inches,	9 00
One quarter column—3 inches,	5 00
One eighth column—1½ inches,	3 00

THE FAMILY HERALD,
124-132 CANAL STREET, CINCINNATI, OHIO.

The Standard of Excellence.

KINGSFORD'S

OSWEGO

Pure and Silver Gloss



STARCH

KINGSFORD'S

OSWEGO CORN STARCH

FOR

Puddings, Custards, Blanc-Mange, Etc.

THE PERFECTION OF QUALITY.

WILL PLEASE YOU EVERY TIME.

Always ask your Grocer for these goods.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 46. NEW YORK, THURSDAY, NOVEMBER 12, 1891. WHOLE No. 246

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - $1.00 per year.
Single Copies, - - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.
Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.
Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,
H. LASSING, M. D., } Editors.
T. P. McELRATH, }
No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

Books 547
Bright Stories.
An Artificial Mirage—*Concluded.* 544
Curious Inventions 545
Domestic Dietetics 545
Editorials 541
Artificial Almonds; Vanishing Coins; Drinks and Fame.
European Salads 542
Free Lunch 543
New Meat Wanted 546
Tornadoes 542
Truffles 546

ARTIFICIAL ALMONDS.

We read in the Washington *Star* that "there are many factories in the United States, particularly in Connecticut, which are engaged in the production of adulterants for sale to various trades, such as ground cocoanut shells for mixing with pepper. It is estimated that there is hardly any pepper on the market at present which is not at least three-fourths something else. The manufacture of such articles intended for the express purpose of swindling consumers, often to the injury of their health, is unrestrained by any legal enactment. In fact, the sophistication of foods has come to be regarded as a part of legitimate business." Statements of that kind do harm rather than benefit to the cause of food purity. A half truth is usually more injurious than a full falsehood. The anti-adulteration effort has enough to contend against without being further handicapped by the necessity of combatting and refuting exaggerated statements made by its would-be supporters. That ground cocoanut shells are often mixed with pepper is an unfortunate fact, but that three-fourths of the pepper in our markets is counterfeit is equally untrue, as likewise is the statement that the manufacture of swindling food frauds is winked at by our law makers. Every reader of the AMERICAN ANALYST knows the fallaciousness of stories of this sort, but only those actually engaged in ferreting out the frauds referred to can appreciate the harm done by such misleading, reckless statements. But a constant supervision is kept over food products in this country, and when, probably, in the near future, wise Congressional legislation is brought to bear on it, the evil will be largely mitigated. Its entire suppression will not be effected while manufacturers and shopkeepers are actuated by covetous greed—nor while the careful housekeeper, solicitous on behalf of limited income, seeks cheapness in her household provision instead of wholesome quality. We learn from Washington that a report, which our correspondent states will be of "a rather startling nature," is about to be issued by the Department of Agriculture on the adulteration of coffee and tea. The former appears now to be chiefly sophisticated by the substitution for the real beans of artificial ones moulded from compositions made of clay, condensed milk and other materials. Secretary Rusk will urge the importance of excluding these and other imitations from importation to this country by the passage of a law shutting out articles palpably intended for the falsification of food. The beans are manufactured by wholesale in Germany and sold here for ten cents a pound. From Utrecht, also, are now coming large quantities of artificial almonds, made from glucose paste. They are shaped and colored by machines, being finally steeped in nitro-benzole to give the necessary odor. The deception is so perfect that, when mixed with the real article, the counterfeits are scarcely to be discovered.

VANISHING COINS.

The old-time problem regarding "what becomes of the pins" has never been satisfactorily settled, for the tentative response that they fall to the ground and become terrapins was long ago, and very properly, repudiated by what is known as good society, as frivolous and empty verbalism. A newer and more significant problem has come to the front—what becomes of the pennies? This is a question that strikes home to the bosom of every householder and father of a family. A century ago Franklin called attention to the circumstance that the accumulation of wealth, computable in pounds sterling, was greatly accelerated by close guardianship of the elusive penny—a forehanded theory that if he were yet living he would doubtless cite to explain the handsome accumulations popularly credited to several of our wealthy citizens, such as the Astors, the Rockafellers, Vanderbilts, Flowers, Carnegies, and others that might be named. There is no doubt those examples would have been exhibited by Poor Richard as illustrations of his famous maxim, though in our own minds the fortunes referred to were due to several other causes besides the hoarding of small currency. Accordingly, the problem as to the ultimate destiny of the penny is still an open question. Its magnitude may be summarized from the fact that the Philadelphia Mint last year alone coined ninety-four million pennies, and yet the requirement for that smallest of pecuniary conveniences is so great that the manufacture goes on unceasingly. We understand that bronze cents are subject to more accidents than happen to any other United States coins. It is said that a penny changes hands in trade ten times for once that a dime passes from one pocket to another. Being of small value, these little pieces are not taken much care of. There are a thousand ways in which they get out of circulation, and thus the minting of them has to be kept up continually. The metal blanks from which they are made by the simple process of stamping are turned out by contract for Uncle Sam by a factory in Connecticut at the rate of a thousand for $1. As they come from the machines, fresh and new, they look like glittering gold. One may get a notion of the number of pennies lost from the history of the old half-cents. Of these 800,000 were issued a few years ago. Where are they now? A few are in the cabinets of coin collectors. None have been returned to the mint for recoinage, or are held by the Treasury. Nobody sees them in circulation. All of them, except some hundreds saved out by curio hunters, have absolutely disappeared. Of the old copper pennies 119,000,000 still remain unaccounted for, save that once in a long while one sees a specimen. There are more than three million bronze two-cent pieces somewhere, out of 4,500,000 of them that the Government issued. Of nickel three-cent pieces nearly two million are yet outstanding, although it is very seldom that one of them is met with. What becomes of these pieces?

DRINKS AND FAME.

If Dibden, who declared that he would not care who made the laws provided he could write the songs of his country, had lived in this generation he might have been impelled to substitute the invention of new beverages in the place of writing new ballads. The discoverer of a "drink" stands a good chance of being immortalized by the association, as is shown by the number of men's matutinal mixtures that are specifically known and periodically called for by the names of their ingenious inventors. Sometimes it occurs, however, that the appellation is bestowed in return for unconscious connivance rather than in token of original discovery, as in the case of the all prevailing American appetizer and "eye-opener," the cocktail. The peculiar title of this famous delicacy appears to be of Mexican origin—somewhat corrupted in the process of adaptation. According to a writer in the *Hotel Mail* the Aztec word

READ PAGE 549.

for pulque, a somewhat alcoholic beverage made from the juice of the maguey or agave, and very popular in Mexico, is pronounced very much like "ocktail," and accordingly General Scott's troops called the liquor cocktail, and carried the word back to the United States. It is said that the liquor was discovered by a Toltec noble, and that he sent it to the king by the hand of his daughter, Miss Xochitl, whom the soldiers misnamed "cocktail." The king drank the liquor and then looked at the maiden. The first tickled his palate, and the second enamored his heart. It was a case of love at first sight in both instances, and he married the girl and started a pulque plantation. From that day to this the Mexicans have kept themselves saturated with pulque, and Miss Cocktail is one of the Venuses of Mexican tradition.

EUROPEAN SALADS.

HOW THEY UTILIZE VEGETABLES ON THE OTHER SIDE OF THE ATLANTIC.

A correspondent of the London *Caterer's Journal* writing of cooked vegetable salads, says: These are very much more popular on the Continent than I find them in Britain, yet in ten years it is wonderful how the intercourse of nations and the "running to and fro upon the face of the earth" has dispelled the old British prejudice that cold vegetables were only good to fry up in grease, or give to the cat or dog, the pigs, or any other similar English domestic or farmyard pets. Almost any vegetable can be turned into a salad. When cooked, one of the most popular is beetroot salad.

BEETROOT SALAD (1).—Red beets are much better baked than either steamed or boiled. The color is more fully preserved by the former process, as well as the natural juices which render the beet a valuable article of nutritive diet. Peel and slice the beetroots after they have become cold. The rings should be thin, and, if very large, cut into halves; lay them on a dish with half rings of Spanish onions between, sprinkle with salt, dust pepper over them; add two tablespoonfuls of vinegar to each half pound of beetroot. A drop or two of chilli vinegar improves it.

BEETROOT SALAD (2).—Cook the beets, and when cold cut into small dice; place in a salad bowl with half the quantity of truffles or morsels also cut up; a small eschalot finely minced, and strew in amongst the beetroot, etc.; this takes off the earthy taste. Sprinkle one teaspoonful of salt to each half pound of salad mixture, and half the quantity of white pepper; rub the yolk of a hard-boiled egg through a sieve, mix into it half a tablespoon of oil or cream, add vinegar to lemon juice (about two tablespoonfuls) and a teaspoonful of mushroom ketchup; pour over the salad, garnish round with cress, endive, or the tender leaves from celery if nothing else can he had. By the way, celery leaves make a very pretty garnish, and it is a wonder they are not more used.

GERMAN BEETROOT SALAD.—Bake a small red and boil a large white beetroot. We will presume the weight of the red to be half a pound, the white one pound. Boil two eggs hard, mince them up. When the roots are cold, peel and cut them into slices one-eighth of an inch thick, and again into strips. Slice a strong onion, and mix with them. Lay the white beet in the bottom of the salad bowl, and the slices of onion over; cover with vinegar, add salt and sugar (about one teaspoonful of each), let them lie for two hours. Remove the onion, lay on the eggs, shelled and minced, on the top; arrange the red beetroot together with slices of lemon, and a couple of tablespoonfuls of finely minced parsley. N. B.—The parsley should be put into a cloth and wrung dry after it has been chopped as finely as possible.

POTATO SALAD.—In France and on the Continent a small potato, close and watery to English ideas, is used for salad making. They are boiled, and whilst hot, dressed with oil, vinegar and pepper. When cold they are arranged on the dish and garnished with minced eschalot, or a centre of onions "sweated" down in butter, *i. e.*, the bulbs are put into a small stewpan, say, twenty little button (silver) onions peeled, with two ounces of cooking butter, the lid is put on, and the pan placed over a gentle fire, where they cook in the steam they generate and the butter. They are shaken from time to time, and when done are lifted out of the pan, drained from the butter (which is used for the white *roux*), and when cold served with the cold potatoes as a centre, the sliced potatoes laid round, and ring of pickled red cabbage or beet forming an outer circle. A garnish of minced parsley, which is generally scalded first and then wrung dry, is scattered over the potatoes.

ENGLISH POTATO SALAD (1).—Cut half a pound of cold potatoes into slices and intermix them with green garden salad stuffs, such as lettuce, cress or endive. Dress this with vinegar, mixed in the proportion of two tablespoonfuls of vinegar to half a teaspoonful of ready-made mustard, the same quantity of salt, one teaspoonful of sugar, and pepper to taste; or, instead of pepper, a teaspoonful of some popular sauce of the Worcester type.

POTATO SALAD (2).—Slice cold potatoes, add a sliced mild Spanish onion, also pickled French beans, cucumber pickles, and a couple of mellow pickled walnuts, all cut up. Pour over this a dressing of oil and vinegar, seasoned with pepper and salt. I have only one fault to find with the majority of the English potato salad makers, *i. e*, they dress the potatoes with oil and vinegar after they have become quite cold, instead of slicing them and adding the condiments when they are yet warm. This simple reversing of the order of dressing makes all the difference in the taste of the dish, and renders it at least digestible, as the oil is a splendid digester of vegetable fibrine and the vinegar a softener; besides, whilst hot, the cellular tissue of which the vegetable is composed is more open, and the oil penetrates into the food, and is not so perceptible to the eye; has not the greasy look, but gives a wonderful softness and *gout* to the food.

HARICOT BEAN SALAD.—Put the beans into cold water, wash and pick them, removing light and worm-eaten seeds. The large beens are uaually preferred for salads. Drain them and put into a pan with boiling water and salt; cook them till tender, shake them from time to time, but avoid stirring with a metal spoon, as it causes the bean skins to shrivel; the water should be well salted, or they can be baked in an earthen ware jar and meat stock—the liquor in which beef, mutton, or poultry has been cooked will do. An onion put in with them improves the *gout*. When quite tender drain them; pour over oil and vinegar in the proportion of two tablespoonfuls of olive oil to one of vinegar, with salt and pepper to taste, Mince one tablespoonful of parsley for each half pound of beans and one eschalot; sprinkle over the beans, and mix up altogether whilst they are warm. Pile on a dish, and when cold garnish with watercress, parsley, or any light green decoration.

TORNADOES.

AN OFFICIAL OF THE U. S. WEATHER BUREAU EXPLAINS THEIR CAUSES.

None of the more powerful manifestations of nature have been more carefully studied than the tornado; yet many of the theories are undergoing very significant modifications. We shall not discuss these theories; but consider the environment of the tornado, its work of destruction, and the other facts that have been determined. One should distinguish between the cyclone and the tornado. The term "cyclone," representing to the scientific mind, a broad storm and of relatively slight violence should give way to the proper term "tornado." This is a very violent electric storm, of limited extent, having an indescribable roar and often a funnel-shaped cloud. On a quiet but very hot afternoon there suddenly appears in the southwest horizon an ominous greenish-black cloud; the sky is almost cloudless overhead and there is a gentle south wind blowing toward the general storm, which almost invariably will be found to the northwest and about four hundred miles away. Occasionally light, fleecy cirrus clouds, generally from the south, pass high overhead. Suddenly the black cloud draws near, preceded by a tremendous mass of dust, and a terrible roar, likened to "the bellowing of a million mad bulls," or to "the passage of ten thousand trains of cars through a tunnel," is heard. This characteristic roar is usually heard at least fifteen minutes before the arrival of the tornado, and in conjunction with other signs gives ample warning of its approach. The cause of this roar is not easy to determine. It is like a continuous roar of thunder, and is, without doubt, some manifestation of electricity, and it has been heard in a violent thunder storm. The wind now blows hard from a western point, but it is hardly proper to say that it shifts to the west, as the cause of the west wind has no connection with that of the previous current from the south. Almost immediately the tornado, often ushered in by a fearful pelting of hail, is upon us. On the south side the destruction often extends a thousand feet or more, while on the north side one may safely stand within four hundred or five hundred feet of the greatest destruction. The velocity of the tornado is nearly double that of the general storm, which shows that its movement is not due to the onward progress of the upper current. Moreover, we have just said that the upper current is from the south, while the tornado advances from some western point. The cause of this enormous increase in velocity is not easy to determine. A tornado has been aptly called the extreme development of a thunder storm. If this view could be firmly established, it would be an important guide for future observations, for the latter storm can be readily studied. In a thunder storm we find that the pressure almost invariably rises; that as to winds there is a down rush in the centre and an out rush on all sides; and we also find frequent heavy hail falls. This storm, like the tornado, appears to have its own source of energy, its velocity is double that of the general storm, and it is situated about four hundred miles to the northwest. That there is a most violent down rush in many tornadoes has been abundantly proved by the crushing of houses, by the breaking of limbs of a tree and causing them to fall at its base, and many other signs. Examination of the region of tornado activity shows the existence of a large number of paths of individual tornadoes. These paths are parallel, and occur farther eastward as night draws on. The earliest occurs about 3 o'clock p. m., and the latest even as late as midnight. These independent tornadoes, so long after sunset, seem to show that the sun's direct heat has little or nothing to do in causing them. The fact that fowls are entirely denuded and left alive, and that houses sometimes present the appearance of having been exploded, are advanced as proof of the existence of a vacuum in a tornado. But these phenomena often occur at some distance from the tornado centre, while the partial vacuum, if there were one, would not extend so far. The existence of the assumed whirling motion in the tornado has not been proved; and the evidence found in the distribution of *débris* is against it. Universal belief prevails that there is powerful suction toward the funnel cloud, and upward rush in the centre; but on this supposition it is difficult to account for the fact that often a frail structure, like a chicken coop, is left intact, while near by a strong house is dashed to pieces. The destructiveness of tornadoes has been very much overrated. From 1876 to 1884 the loss from tornadoes in the important States was only about one-fifteenth of that by fire. During the present year, up to September 2, it is reported that two hundred and five persons have been killed by lightning and ninety-five by tornadoes.—*Prof. Hazen, in Engineering Magazine.*

FREE LUNCH.

HOW THE SALOONS OF NEW YORK ARE PROVIDED.

AN EXTENSIVE INDUSTRY WITH WHICH FEW ARE ACQUAINTED.

A reporter of the AMERICAN ANALYST passing recently through one of the thoroughfares on the extreme western edge of the up-town business section of the city had his attention attracted by the unloading of a wagon in front of a liquor saloon. A steady procession of wagons and carts was moving in both directions, and the contiguous supply of liquor saloons was only limited by the number of aldermanic aspirants who had selected that locality as a foothold for their ambitious purposes. There was nothing phenomenal, therefore, in the mere circumstance of a vehicle disgorging its contents into a saloon, but the character of the merchandise thus transferred was what excited the reporter's curiosity. The wagon was a boxed-up affair, similar in shape to the express wagons in which our city mails are transported. Folding-doors opening at the rear displayed to view an ingenious system of boxes containing sliding trays, and these latter, as they were carefully carried into the house, were seen to be filled with a variety of toothsome eatables. One in particular bore a mammoth oval platter, on which, on a snowy napkin, a magnificent salmon, adorned with flowers, was stretched at full length in naked glory, like a nymph reposing after her bath. Others contained dishes of tempting croquettes, boned turkey, patties, salads, crisp and cool, and sandwiches enough, apparently, to supply several barge-loads of famished Fresh Air excursionists. Sardines, olives, shrimps, and a variety of condiments, on appropriate dishes, were interspersed among the more substantial viands. Our reporter, using his professional privilege, entered the establishment and was jovially welcomed in a spick and span newly equipped bar-room by the proprietor, who, bareheaded and in his shirt-sleeves, was disposing the dishes as they were brought in upon a table running across the room. It was the opening day of a new saloon, and the tempting feast that was being laid was a "free lunch" for the benefit of the public. In the short conversation that ensued, the reporter, who, of course, was a teetotaller, and wholly unused to the ways of metropolitan bar-rooms, learned to his amazement that the very handsome layout was probably only a sample of many hundreds that had been provided that day by an establishment which makes a special business of furnishing free lunches for bar-room entertainment; and that apart from the linen and china, and a few other accessories of this special occasion, the repast before him comprised only a small portion of the daily product served to saloons throughout the city. The free lunch is essentially an American institution, like the bar-room to which it pertains. Its only transatlantic prototype at the present writing is, we believe, to be found in the taproom of the Mariners' Hotel in Liverpool, where, since May of the present year, a free-to-all spread has been provided by the proprietress, Miss E. Joyce, from 11 to 1 daily. In this country it is an almost universal adjunct of the bar-room business, and in several cities, notably San Francisco and New Orleans, the gratuitous lunch that is daily set forth to attract drinking customers constitutes a repast that in elegance of preparation and variety of viands would do credit to the dining-room of the wealthiest citizen. In New York the free lunch system, if conducted on a less elaborate scale, is equally generous in its provision for the hungry multitude. If you step into any bar-room on Manhattan Island during the noontide interval of rest from work, you will find a layout of eatables of some sort, from the never failing brown bread, salted pretzel, and dried herring of the beer saloon to the soups, fish, cold meats, sandwichse and salads which an attentive waiter stands ready to dish out for you in liberal portions in the brilliantly appointed *cafes* that decorate the more fashionable and the commercial sections of the city. A very extensive business has grown up for furnishing public houses with these free luncheons. How extensive that is may be fairly conjectured from the fact that, excluding from the computation the 3,000 German beer shops where, as already stated, the desire for the foaming tonic—no longer entirely Teutonic—is stimulated by brown bread, sour, and seasoned with cardamum seeds, and by chunks of dried salt herring, there are fully 7,000 bar-rooms in New York, almost every one of which provides its customers with a free lunch daily. Excepting a few establishments connected with hotels of the higher grade, where meals are served in restaurants "on the European plan," the surplus of which graces the bar-room on the following day, these lunches are all prepared by outside caterers, who supply their patrons daily. There are about twenty concerns of this kind in the city, a few of which find it necessary to use a horse and wagon to make their daily deliveries—the majority, however, sending their dishes to their customers in covered trays carried by hand. The largest free lunch purveyor in the city is the one which supplied the "opening" entertainment mentioned at the beginning of this article. It is the Knickerbocker Catering Company, an incorporated Company, of which William Fowler, Jr., is President; John L. Adams, Vice-President; and Captain William Fowler, Secretary. The latter is widely known as the former genial proprietor of the Knickerbocker Cottage, in Sixth Avenue, and to-day as the Grand Panjandrum, "little top button" and all, of more social and convivial organizations in this city than any other living man ever was affiliated with at one time. The Knickerbocker Company is an institution that deserves and well repays inspection. It began business a few years ago on a small scale, in John Street, extending gradually into larger quarters successively in West Street and Carmine Street, until in the early summer of the present year its growth necessitated the renting of the commodious quarters it now occupies at 626 Washington Street, where a four story and basement building is wholly appropriated to its use. On the ground floor are two entrances from the street, one disclosing a handsomely appointed office, the other serving as a wagon way, into which the delivery wagons are backed to receive their daily loads. The rear apartment is a large and airy kitchen, where Mr. John L. Adams, Superintendent of the *chefs*, directs his force of assistants. Three huge ovens serve for baking everything excepting bread, that commodity being furnished exclusively by the regular bakeries. In a monster cauldron, large enough to serve the purposes of an army corps, beans are boiled by the barrelful, while in another vast pot potatoes are boiled on a similar wholesale scale. When the various articles are cooked they are apportioned out in neat vessels, pans, and dishes, and are placed in compartments, each kind by itself, on shelves which line the sides of the large apartment in front of the kitchen. Here daily, in the early morning, they are loaded into the wagons for distribution among over a thousand saloons. On the second floor is, in one corner, a vast ice-house and cooling room, the rest of the apartment being appropriated to sinks and troughs, where the returned dishes are washed, and pans are scoured by a number of female employes, who likewise pare the potatoes, pick the meat from the shells and claws of lobsters, and otherwise prepare the various viands for the kitchen. The third and fourth floors are utilized for storage purposes, excepting an apartment on the latter story, which serves as a dining-room for the manager and his clerks, the meals being sent up from the kitchen in a dumb waiter. Everything in the building is neat and orderly to the senses, and eatables and utensils alike are handled with the solicitude that one fondly trusts characterizes the culinary processes in his own domestic establishment.

The extent of the free lunch system in New York can in some degree be estimated from the variety of comestibles provided by this one catering company. These comprise, daily, clam chowder, clam, vegetable, and tomato soup, beef pie, veal potpie, boiled ham, baked beans, served in eight different styles, besides the toothsome Boston method, boned turkey, macaroni, bean, potato, salmon, chicken and lobster salads, fried oysters, corned beef in glorious rounds or hashed, roast beef and turkeys, boiled pig's head, baked livers, liver and bacon, sweetbreads and calves' brains, soft crabs in season, fried eels, and, on Fridays particularly, fish in variety of kinds and diversity of styles. Add to these cooked meats a great assortment of condiments and "fixings"—olives, sliced beets, pickled tripe and pigs' feet, mixed pickles, etc.—and it will be conceded that the gratuitous appeasing of the noontide appetites of the thirsty but impecunious New Yorker is an enterprise of extensive proportions. Ten wagons are required to make the daily deliveries of the Knickerbocker Company. Each driver, having received and reported to the manager on the previous day the orders of his several customers, backs in his wagon to the distributing counter in rear of the office, where, by skillful system, his already selected load is speedily shipped and checked off on the shipping clerk's blotter. The ordinary dishes are set in trays that, fitting together, are piled on one another—about fifty trays constituting a wagon load. The fish and specially prepared dishes are sent out in crates with hinged lids, inside of which the platters are firmly held by cleats. About 6 o'clock each morning, excepting Sundays, these wagons set out on their tours of distribution, and towards noon they are back again, when the drivers make returns of the day's transactions, give in their books containing the orders for the following day, and turn over the cash received for what they had just been delivering. For this is a strictly cash business—each day's order being paid for on its delivery. The 7,000 New York saloons that provide free lunches to their patrons must pay out a goodly sum of money daily to these purveyors; but as the cost of the food is more than offset by the increased trade it attracts, the expenditure does not, as one might at first imagine, react upon their customers as a tax upon drinks, to be levied by an increased dilution with Croton water. Some idea of the cost may be gained from the orders filled by one of the ten wagons on the day our reporter visited the establishement. These, representing, of course, a number of saloons, comprised 12 gallons of clam chowder, 4 of clam soup, 1 of tomato soup, 1 boiled ham, 46 pans baked beans, 25 crocks Boston baked beans, 2 crocks macaroni, 5 dishes bean salad, 20 of potato salad, 16 of salmon salad, and 1 of lobster salad, 1 gallon sliced beets, 4 pigs' heads, 40 lbs. corned beef, one plate corned beef hash, 13 platters of fish and 6 of fish hash, 200 fish balls, 72 fish cakes, 2 rounds roast beef, 16 lbs. larded liver. The entire delivery of that wagon on that Friday amounted to $70.55 in value. There are some single saloons whose daily expenditure for free lunch foots up to more than half that amount. A well known establishment on Park Row, above the bridge, consumes each day an average of 200 loaves of bread, 150 lbs. sausage, 30 lbs. corned beef, 20 lbs. roast beef, 50 lbs. Frankfort sausages, besides a variety of smaller items, at an aggregate expense of upwards of $40 for every noontide repast. The average cost, however, to well patronized saloons in business thoroughfares, where every other passer-by is not in search or in need of a free meal, may be put at from $6 to $12 per day. It is accordingly within reasonable limits to estimate the daily expenditure in New York for free lunches at $50,000; a statement that will at first stagger the reader's belief, but one that will, as the above figures indicate, challenge acceptance on investigation. Extend the computation to cover all the cities in the country, and the free lunch business will be found to represent an enormous annual expenditure.

BRIGHT STORIES.

AN ARTIFICIAL MIRAGE.

ROBERT DUNCAN MILNE, IN "THE ARGONAUT."

(*Concluded from page* 532.)

"For a year previous to my coming here I had been staying in the Owens River Valley, prosecuting some scientific researches, into the details of which I need not enter here, and having concluded them, decided upon taking the Southern route, so as to strike the Atlantic and Pacific Railroad at some point on the desert. I accordingly started out one morning last March on my hundred-mile trip, with a light wagon and a span of mules, taking with me my instruments and the more valuable articles of my household furniture, and sending the rest to the city by the more roundabout Carson and Colorado route. Among other articles I took with me, for safe packing, was a large and very handsome mirror, which had been one of the few adornments of my country home, and which just filled the bed of the wagon.

"I stopped the first night at Coyote Holes, and the second at Desert Springs, near the mouth of Jawbone Canon, the latter being the last station on the old team road from Los Angeles to Independence, before entering on what is known as the forty mile desert. This forty-mile stretch of level sand must be passed over between dawn and nightfall, as there is no intermediate water on the way.

"The day was a hot one for the middle of March, and towards noon, as I had then gone more than half way, I thought it time to feed and water my team and rest for an hour or two till the heat had somewhat subsided. My spirit-lamp had got mislaid, and, before I found it, I had to remove a good many articles from the wagon, among them the mirror I spoke about. This I stood on end, and for the time being, with its back resting against the seat of the wagon, and proceeded to prepare some coffee in such shade as the wagon afforded from the midday sun. My matches I always carried in the jockey-box, and had to climb to the dash-board to get them. As I did so, I happened to glance over the top of the mirror, and the scene which then met my gaze was one that at once riveted my attention and transfixed me with astonishment. There, directly in front of me, and seemingly not more than a mile away, was depicted a scene which I at once recognized as a fac-simile of the town of Santa Barbara, as seen from the hills that rise above it on the east. In the foreground was the old mission, with its many-arched facade gleaming white against the background of fields and orchards below; beyond that again the town, the streets, the Arlington Hotel, and, last of all, the wharf and the ocean, its sapphire waves dancing and twinkling in the summer sun.

"So entranced was I by the scene, every feature of which was familiar to me, that it was several moments before my reasoning faculty resumed its sway. I knew that I was gazing on a mirage—as perfect and vivid a one as I had ever seen upon the Nubian Desert—and then I found myself speculating upon causes. I jumped to the ground beside the wagon—the scene was still there. I walked ten paces to the right—it was gone; the same distance to the left—it had disappeared. The heated air shimmered above the sand in every direction over the level expanse of desert. All the conditions of mirage seemed to be present, and yet nothing was visible except in the neighborhood of the wagon.

"I again climbed to the seat and stood looking over the top of the mirror. There was Santa Barbara, as distinct and vivid as before. 'Could the mirror,' I asked myself, 'possibly have anything to do with the production of the mirage?' I took out a pocket compass, which I always carry, and found that the needle pointed nearly due south-west. Reference to a pocket map of the State showed me that Santa Barbara lay in exactly that direction from my present position on the Mojave Desert, and that the needle stood in line with the bed of the wagon, and, consequently, at right angles to the plane of the mirror. This could scarcely be an accidental coincidence. Could it be possible that the mirror was directly instrumental in projecting the spectrum of the scene before me? But why that particular scene and no other? why not a more contiguous or more remote point equally as well? A thought struck me. Gently and very slowly I pushed the top of the mirror forward about an inch, so that the plane of its longer axis, which, owing to its leaning position against the back of the seat, was originally some forty degrees out of the perpendicular, approached a little thereto. At once the picture vanished, and was replaced by a level expanse of blue water, an occasional white-sailed ship flashing across the scene. Another inch forward and I caught a glimpse of a tropic island, such as are common in the South Pacific. It passed from the field of vision so quickly that it was only with extreme care, and by moving the mirror backward and forward by minute fractions of an inch, that I again caught it, so that it stood before me in all the splendor of its tropical verdure and the calm of its sapphire sea. Further forward motion brought a sandy desert upon the landscape, in character like those of Central Australia, and a still further approach to the perpendicular brought snow and desolate ice-floes into view. I should never have tired of the endless and varying panorama had not the sun's declination warned me that I must be moving if I hoped to make Willow Springs that night.

"Had not business compelled my presence in San Francisco, I would have pursued my investigations still farther on the desert. I had seen enough, however, to convince me that the phenomenon which we term the mirage is not accidental in character, but is dependent upon immutable physical laws, and that the reason is not invariably apparent, in some shape or other, upon every plane surface, desert or ocean which radiates heated air, is that the extent of the visual angle formed between the spectral scene and the eye of the beholder is a matter of such extreme nicety that, unless the image is projected exactly in the plane of the eye of the beholder, it falls either above or below such plane, and accordingly does not fall within the field of vision. The occasions are rare upon which this happens naturally, and it is only by employing a plane mirror to deflect the light rays, which fall upon it from distant objects, in an absolutely horizontal direction, that one can control at will the subject of a mirage.

"And this brings me to the discussion of another characteristic of the laws governing the transmission of light, which is wholly at variance with present scientific theory, but is really in consonance with the known laws of optics. How is it possible that every scene, pictured by the mirage, always appears at exactly the same distance, no matter whether the real scene is a hundred, a thousand, or ten thousand miles away? Why, for instance, did the tropic island in the Pacific, which I have described, seem as near as Santa Barbara did, though the latter was about one hundred, while the former was probably three thousand, miles away? And yet this seeming paradox is susceptible of a very simple explanation.

"Light, as every school boy knows, radiates from every object equally in every direction, and each ray travels in a straight line, so long as the medium through which it travels is homogeneous in character. It is manifestly impossible that the light rays, emanating from an island in the South Pacific, could reach California if they proceeded in a straight line, as the curvature of the earth would forbid it. Consequently they must travel in a series of obtuse angles or in a curvilinear course. We know that the simpler forms of mirage are due to the fact that a natural mirror is formed at the plane of junction between two strata of air of differing densities. We know, also, that the air or atmosphere which surrounds the earth moves with it and is as much a part of it as the water of its oceans. There must, then, clearly be a dividing line, a plane of junction, between the atmosphere and the ether, or ethereal medium, which is supposed to pervade space beyond. The atmosphere has been variously supposed to stretch from forty to two hundred miles out from the surface of the earth—investigation has shown me that the latter figure is nearer than the former, the exact height being easily deducible from the angle made by the mirage mirror and the distance of the object, the image of which is projected in the mirage.

"Now, natural laws are invariable, and analogy demonstrates that a natural concave reflector of small curvature and immense radius must be formed at the plane of junction between the atmosphere and the ether—so slight is the curvature at any particular point that such a reflector may be said to be composed of a series of plane mirrors. It is a law of optics that the angle of reflection is equal to the angle of incidence. It is, also, a law of optics that rays of light are refracted in their passage through media of varying density. We know that the atmosphere becomes rarer and rarer in proportion to its distance from the surface of the earth. Accordingly, light rays proceeding from earthly objects become more and more curved in their outward course through the gradually varified atmosphere, till they strike the gigantic atmospheric reflector formed at the point where ether and atmosphere meet. The direction which light rays, entering a rarer from a denser medium, take, is ever a deviation from the perpendicular; accordingly, the direction taken by the light rays from Santa Barbara and those from the tropic island were sections of a circle or a parabola till they struck the atmospheric reflector, from which they were again deflected inward in a course the exact counterpart of their outward movement. While my mirror was reflecting the rays from Santa Barbara, it was, at the same time, reflecting the rays from the tropic island, and from every section of one hemisphere of the earth's surface in the same plane and on the same great circle; but only the rays from Santa Barbara were reflected in an exactly horizontal direction, as was necessary in order to bring them within the field of vision; the *simulacra*, or mirages, of all other scenes were projected either too high into the air or too low into the earth, and could only be projected into the visual field by raising or depressing the mirror, so that an angle drawn horizontally from the plane of the mirror would be the exact counterpart of the angle at which the rays from the ethereal reflector impigned upon it, these again emanating from a point on the earth's surface just as remote upon the other side. I trust I am making myself intelligible and not using expressions tending rather to obscure than elucidate the very simple principle involved.

"The reason for the projection of the image of a distant object, at apparently the same distance from the beholder, can only, I think, be explained on the hypothesis of the emissional or corpuscular character of light; the ascending rays being, by passing through a series of rarer and rarer air strata, immeasurably refracted and diffused at the point of impact with the ethereal reflector, and in exactly the same ratio concentrated and gathered during their downward course, so that the image looked at is the exact counterpart of the original, and the sense of distance is practically lost. Further investigation will certainly demonstrate the exact nature of the optical law involved in this apparent paradox.

"And now, gentlemen, I have explained as well as I am able the nature of my chance discovery, and you have seen the preparations I am making to produce in a mechanical and positive manner that phenomenon which is now seen only accidently upon heat-radiating seas or deserts. I calculated, by a very simple

measurement of the visual angle from three points about my wagon, that the spectral image projected from my mirror, which embraced about two miles in breadth of vista, and the distance of the more vivid portions, of which was apparently about two miles from the beholder, was not really more than one hundred and fifty feet away, the effect of distance being due to the inability of the eye to frame impressions independently of those to which it is normally accustomed, the relation of size to distance being one of these. That is the reason for the dimensions of the area which I have taken such careful measures to have thoroughly and uniformly heated, to the same degree as thermometers indicate a few feet from the surface of the soil in a desert.

"Over there" (here the doctor pointed to three large piles of iron castings lying near) "are the sections of a circular track which will run round the periphery of the heated circle. Upon this will be wheeled a car, supporting a magnificent silvered mirror of plate glass, twelve feet by eight in measurement, manufactured expressly for me and for this purpose, so that the plane of the mirror can be directed to any point of the compass, and we can command a range from the North Pole to Equatorial Africa on the one hand, and from China to Central Europe on the other. You can imagine the splendid possibilities which underlie such an appliance as this. The mirror swings through an arc of nearly forty-five degrees, so that it will project an image or artificial mirage of scenes from one mile to twelve thousand miles away in any desired direction, its inclination from or toward the perpendicular being regulated by a micrometric rack-and-pinion motion of extreme delicacy, so that any spot, within the hemisphere of which that mirror is the centre, can be found with unerring precision by the simple use of the compass and micrometer, in the same way as an astronomer regulates his equatorial. The nearer the plane of the mirror is brought to the perpendicular, the further off will be the scene of which it projects the image upon the heated air in the centre of my circle; the nearer the plane of the mirror approaches an angle of forty-five degrees, the nearer will be the scene reproduced. A true angle of forty-five degrees will project a spectrum of the mirror and my grounds themselves, while a true perpendicular will project no image at all, the angle of reflection in such a case being coincident with the angle of incidence, and both running horizontally through air.

"And now, gentlemen, let me repeat my invitation for next Sunday. This is Wednesday. During the next three days I shall lay the circular track, mount my mirror on its car, and see that my heat-generators and pipes are in thorough working order. I will reserve my first trial to be made on Sunday with you, and I feel sure you will not disappoint me. I have now an urgent appointment I must keep, so I beg you will excuse me. Good-bye."

So saying, Dr. Wyman shook hands and turned in the direction of his residence, Harkness and myself walked silently to the entrance-gate with a feeling (at least in my case, and I think in his) that after all the mysteries of nature are just beginning to be unlocked, and more than ever appreciating the remark of one of the greatest physicists who ever lived, that with all his knowledge, in view of the infinite possibilities and mysteries which he saw on every side, he felt like a little child picking up grains of sand upon the shores of the ocean of eternity.

CURIOUS INVENTIONS.

SOME SINGULAR SUGGESTIONS OF INVENTIVE GENIUS.

The history and growth of inventions are subjects in which all are interested. The difficulties and rebuffs which inventors have had to undergo in the perfecting of their ideas, their perseverance and ultimate success, form most interesting reading. Vast sums of money are brought in by apparently simple inventions requiring no great mechanical knowledge. The accounts of these read more like the wildest fiction than simple fact, and are sufficient to make the least covetous among us yellow with jealousy. The stylographic pen brought in £40,000 a year; the india-rubber tips to pencils £20,000; metal plates for protecting the soles and heels of boots brought in £250,000 in all; the roller skate, £200,000. A clergyman realized £400 a week by the invention of a toy; another toy, the return ball (a wooden ball with a piece of elastic attached) brought in an annual income of £10,000; the "Dancing Jim Crow," £15,000 a year. The inventor of a copper cap for children's boots was able to leave his heirs £400,000; whilst Singer, of sewing machine fame, left at his death nearly £3,000,000. There are, however, other and wonderful things which people have thought it worth while to patent, strong in the hope of making a big fortune in the near future, only to find in so many cases that their inventions were impracticable, and very often perfectly ridiculous. Among such may be mentioned a child's bib with a trough attached, the whole formed of some waterproof material; a pocket which cannot be picked; a muff and boa filled with air to save you from a watery grave; cuffs and collars made of steel, painted or enamelled white; trousers with double legs—on the outer legs getting soiled or bespattered you tuck them up, and behold a clean pair. This arrangement would be suitable, I should say, only when worn with an overcoat. Under the head of umbrellas and walking-sticks we find some marvelous inventions. One is an umbrella which, in some wonderful way, is converted into a walking-stick, and so formed that a spear can be attached, when it is used as a weapon of offense and defense. I recommend it to elderly ladies in the dog-days, as a protection against the sun and mad dogs. The next invention is a rain-absorber, to prevent rain from running down from hats and umbrellas. The absorber is formed either of uncovered sponges or of sponges covered by a fabric. We are told that the absorber can be readily removed from the article, squeezed and replaced. We come next to an article which the inventor has named (take a long breath and shut your eyes) the "Rhabdoskidophorus." This is an umbrella which can be taken apart; the silk and ribs being hidden within the stick; it is thus transformed into a stout walking stick.—*Strand Magazine* (*London*).

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

November.

MEATS.—Beef, mutton, pork, venison.

POULTRY AND GAME.—Chicken, duck, geese, grouse, hare, partridge, pheasant, pigeons, rabbits, turkeys, widgeon, wild ducks, woodcock.

FISH.—Brill, carp, cod, whiting, salmon trout, perch, smelts, oysters.

VEGETABLES.—Artichokes, broccoli, celery, potatoes, turnips, cauliflower, cabbage, carrots.

FRUITS.—Apples, pears, quinces, grapes, nuts.

PRACTICAL RECIPES.

FILET OF MACKEREL.—Carefully remove the filets of two large mackerel without taking off the skin. Pour some hot sweet oil and butter into the dish in which the fish are to be served, and lay the filets in it beside each other. Put them in the oven for half an hour, basting frequently; then take from the oven and pour tomato sauce over them after skimming off all the butter possible; strew fine dry bread-crumbs over them and bake slowly until brown.

BECHAMEL SAUCE.—Peel and slice very thin a dozen small white onions. Put them over the fire with a piece of lean ham, two or three spoonfuls of butter, and a few whole peppers. Cover the vessel holding them closely and steam gently until soft, but do not brown. Mix smooth in a little cream two tablespoonfuls of flour, then add a cup of clear broth. Add this to the onions and cook together, stirring all the while until the sauce is smooth and thick; then season with salt and strain it.

ROAST BEEF.—Take six or eight pounds of ribs of beef, and prepare a pan for roasting. Take a medium-sized onion, together with a good-sized tomato and a little suet; chop together very fine, so fine that they become a pulp, adding a little thyme, allspice, salt, pepper, and about a tablespoonful of vinegar. Mix all these ingredients together until the mass becomes quite smooth; then rub the beef thoroughly with this seasoning, leaving a part of it to mix with the gravy. When the meat is partly cooked put in the seasoning for the gravy, at the same time adding sufficient water to make the gravy. This seasoning will thicken it sufficiently, so that no flour is needed. Cook rare or well done, according to taste.

EGGLESS PLUM PUDDING.—One heaping cupful bread-crumbs, two cupfuls flour, one cupful chopped suet, one cupful milk, one cupful molasses, one cupful raisins and currants, one teaspoonful salt, one teaspoonful soda, one teaspoonful cloves, one teaspoonful cinnamon; bake two and a half hours.

FRIED ONIONS.—Slice your onions and let them soak in milk for ten or fifteen minutes; then dip each slice in flour, and then brown them quickly in very hot lard; drain them and lay them for a few moments on coarse brown paper to absorb the grease.

CELERY FRITTERS.—Cut some crisp stalks of celery into inch-long pieces, and boil them until tender in slightly salted water; drain them, then make a batter as follows: One teacupful milk, two well-beaten eggs, a little salt and a small teaspoonful of baking powder, one cupful of flour; add the celery to this and drop by spoonfuls into boiling fat, fry a light brown, drain on coarse brown paper, and serve with the meat.

ALMOND CAKES.—Whip the yolks of fourteen eggs until very light, and to them add half a pound finely chopped almonds and one pound powdered sugar, three-quarters pound butter, melted but not hot, and one pound flour. Beat until light, then add the whites of the eggs beaten to a froth, and bake in small greased and floured pans.

ANOTHER ESTIMATE.—Michelson has calculated the velocity of light to be 186,360 miles per second.

TOO HASTY.—It is said that the head porter at the Grand Pacific Hotel, Chicago, has retired with a fortune of $100,000, accumulated from the tips given him by the patrons of the house. It is a pity he had not waited for the World's Fair, for he might then have expected to double this fortune from English visitors.

FRESH BEER.—Aluminium is recommended by a well-known scientist of Vienna (Dr. Schultze) as a good material for preserving the freshness of beer, which deteriorates when kept a few minutes in a glass. The most effectual preservative, of course, is a silver vessel, but aluminium would be forty times cheaper than silver, and only half the weight of pewter.

ANCIENT VEGETATION.—In Galveston in sinking an artesian well which is now 2,040 feet in depth, gray and green clay mixed with wood, lime concretions, and pebbles were found at a depth of 1,510 feet. The age of the wood is estimated at 200,000 years by Prof. Singley, and in the stratum, which is one hundred feet in thickness, he found seeds resembling apple and hackberry seeds.

TRUFFLES.

HOW THAT GASTRONOMIC DELICACY IS RAISED IN FRANCE.

Gastronomers will be interested in a paper contributed by Horace G. Knowles, United States Consul at Bordeaux, to the coming issue of "Consular Reports," on the subject of "Truffles." The truffle, he sets out by explaining, is "a tuberculous fungus, a sort of morbid extravasation of vegetable sugars analogous to oak balls or nut galls, and doubtless originating, as these latter, by the sting of an insect." He quotes the naturalist Valserres, as saying that "during the months of July and August, a little fly, azure-winged and small of body, penetrates into the soil at the base of oak-trees or elsewhere in search of certain juices there to be found. With its sting it pierces some portion of the root, makes an incision, and therein lays its eggs. From this incision, or scar, there exudes a viscous substance, which, clinging to the root, grows into a truffle. How exact this theory may be," Mr. Knowles goes on, "is matter of conjecture. Certain it is that truffle-hunters are attracted to their spoil by a little insect; but it is not altogether impossible that the fly itself is attracted, like a true gourmet, by the very existence of the precious object. "There are three species of truffles found in France—the black and most common, the white (highly prized), and the *truffe a l'ail*, which has a flavor of garlic. They are found in all soils, but chiefly in oak forests or where the earth is damp and calcareous, thriving best in an almost sterile soil. The best that the country affords come from Perigueux and about Angouleme. In appearance the ordinary truffle is about the size of a walnut, with a rough brown, warty surface, closely akin to the potato, which it likewise resembles in consistency, though not in color. Not yielding to cultivation, they must be sought for in chance places, nor is the method of obtaining them the less interesting. It is known that the pig has a vigorous appetite for this subterranean morsel. It is a decided passion with the race; so that, as the day dawns, out he is led to perform a duty which, though rather odious and disappointing to him, is particularly lucrative to his master. As the scent of the fox leads hounds to the trail, so the odor of truffles attracts the porker to the cherished bed. He sniffs about this way and that until he locates the desired object, when he immediately begins to root up the earth with his awkward snout. He is closely watched during the operation by his owner, who, upon the swine uprooting the truffle, whacks him sharply over the nose with a stick. In the responsive grunt of pain which follows this brutal blow the soft, moist fungus is dropped from the animal's jaws, and, before he can again pick it up, it is bagged by the hunter. The beast, nothing daunted, presses on to another spot, where, hidden a few inches below the surface of the ground, are more of the epicurean dainties. And thus, after numerous repetitions of the same performance, the animal, thoroughly disappointed, gives up in disgust and submits to being led back to his pen; but on the morrow, thanks to the pig's short memory, the occurrences of the day before are completely forgotten, and he experiences again the same joy and pain, hope and disappointment, expectation and defeat. Recently it has been found that dogs could be trained to perform the duties that are instinctive to the pig. and so great is the demand in France for the truffle that many of the canine species are now, in certain districts, possessed of this estimable talent. The training through which they pass in order to acquire a scent is a decidedly agreeable one. To begin with, finely cut or sliced truffles are mixed daily with their food until at length they develop a liking for the flavor. Afterwards their owners conceal, in some portion of a field where truffles are supposed to exist a little tin dish of *filet aux truffes*, covering the same with a few handfuls of earth. The dog is then brought out and urged to hunt for the dish, goaded by an empty stomach. When he at length finds it, he is caressed by his master, and thus in the space of a few weeks he will readily learn to hunt for the vegetable itself. Truffles are seldom found twice in the same place. A field that may yield a great quantity this year will be quite fruitless the next. Though Alexander Bornholz, a German scientist, claims to have transplanted and raised the article in question, repeated experiments to that end have proved but failures. The Count de Noa, a Frenchman, and a certain M. Rousseau made like claims, but they have in each case been discredited. The very fact that the truffle is a rarity and that it grows only in certain districts has been enough to make it an object sought after clandestinely by peasants or those who carry them to market. There are poachers for truffles as well as for game, who hunt by night with their dog or porker, a plague to landowners and a bete-noire to local gendarmes. Scarcely is there a canning establishment at this moment in France that does not, among other alimentary products, preserve this dainty. It has become as indispensable to the dinner table of the *noblesse* as the aromatic sprig of garlic to the frugal repast of the peasant. The annual production is valued at about $3,000,000. The article is sold in the departments where found at $1 a pound, and at almost double that price at the principal markets of the larger cities. Not alone does the truffle thrive in France; they are found in quantities in Italy, Spain, and Holland, but are of indifferent quality compared with the French, lacking the delicate and incomparable flavor of the native product. In the United States, especially in California, some attention has been given within the past few years to the gathering and preserving of truffles, and a number of Western packers have come to Bordeaux in order to inform themselves regarding the canning process. It is a very simple one, the truffles being partly boiled, like tomatoes, asparagus, and other vegetables, and then jarred and sealed in their own diluted juice. All meat and game products are also 'truffled,' the vegetable being cut into small squares and inserted into the substance of the article preserved."

A NEW MEAT WANTED.

A SUGGESTION FOR THE RAISING OF WILD ANIMALS.

The lack of variety in those meats which, whether flesh or fowl, must always form the groundwork and basis of an English bill of fare is a want keenly felt, but most difficult to remedy. Among the thousands of tons of foreign game imported yearly, there is hardly a beast or bird which may not be had in better quality and condition at home, except the prairie bird and the quail; for those canvas-backed ducks which escape the keen search of the New York dealers and find their way across the Atlantic alight only on the tables of City companies and millionaires, like the caladrus of old, that appeared only at the deaths of kings. Yet there are probably twenty people in this country who have eaten canvas-backed duck for one who has ever tasted swan, or rather cygnet, the finest water fowl for the table, alike in size and flavor, a bird easy to rear, most prolific, rivalling even the breast of a teal, without the fatal drawback of that excellent little bird, that no one has ever been able to get enough of it. Even now, though so neglected by the world, swans may be had from the Norwich Swan Pit for $2 each. They weigh some sixteen pounds, and with them is forwarded an ancient recipe for cooking them, "done into rhyme by a person of quality." Another "fowl" which was once reserved for the tables of kings, and is now hardly thought good enough for Aldermen, is the peacock. What roast swan is to roast goose, such is roast peacock to roast turkey. Many owners of country houses who keep peacocks and let them run wild and nest in their woods and shrubberies, take little trouble either to fatten or to cook the pea chicks. If they did, they would perhaps take more pains to rear these birds for the table. The meat is very white and of exceedingly fine and close grain, and has the true game flavor, with none of the stringiness of the common turkey. But flesh, and not fowl, is what is mainly desired to widen the possibilities of the dinner table. Fatted swans, or peacocks, or American turkeys might be increased and multiplied without affording more than an occasional relief to the monotony of the menu and the brain-searching of housekeepers. What is wanted is some new and large animal, whose flesh has a character of its own which would readily distinguish it from beef or mutton, and an excellence which shall make it independent of any special treatment in cooking—something which shall combine the game flavor with the substantial solidity of a leg of mutton. An increase in the quantity of venison reared in this country naturally suggests itself. It is objected that deer can never pay to fat for food, because the annual growth of their horns reduces them so much in condition as for a time to make the venison worthless. But this applies only to the bucks; staggs might be kept like bullocks, and doe venison might still be remunerative. But swan, peacock and venison are, after all, only revivals of the old bill of fare. To find a new meat, we must take stock of the world's resources of animal food, and inquire after due survey if there does not still exist some neglected quadruped which will furnish what we seek. Roughly speaking, our main supply of animal food is drawn either from the rodents, the ruminants, or the pachyderms—represented by the rabbit, the ox or sheep, and the pig. To vary the supply at our disposal, we shall probably not be able to go beyond these limits; for the general experience of civilized man has already pronounced judgment on the question, and science supports the verdict. It is no good to eat a wolf, for the wolf has already got the benefit of eating the lamb, and left no surplus for us. Of the three great tribes, the rodents may be dismissed from our search; for those that are not already used as food are either too small to be useful, as the lemming, or the guinea pig, or too repulsive in appearance, like the capybara, or in habits, like the rat. Of the pachyderms we find only one which is domesticated for food, the dear familiar Berkshire or Yorkshire piggie. The larger pachyderms are too big; the smaller, like the peccary, too savage; the wart hog and other African varieties, too repulsive. Clearly, then, we must have recourse to the list of ruminants if we are to find one to add to the bill of fare. At first the choice seems wide enough. It embraces all the deer tribe, the wild sheep and antelopes. goats and ibexes, which are numerous; but all have a rank and disagreeable flavor, which must prevent their coming into the list of first-class food. The possibility of extending the supply of venison we have already considered. The wild sheep would probably differ too little in flavor from mutton to make it worth while to domesticate them, though those of the Himalaya will breed freely in confinement. The antelopes, therefore, alone remain, and it is among their number that the animal wanted must be found, if it is to be found at all. If the acounts of African hunters are to be relied on, the venison obtained from the larger kinds of antelope found in South and Central Africa is really excellent, that of the koodoo, the oryx, and the eland being the best. Perhaps the highest and most modern authority available for quotation on the subject is Lord Randolph Churchill. His Lordship's verdict on the eland, the flesh of which is said to surpass that of all other antelopes, as much as Welsh mutton does Lincolnshire "teg," will be of material interest to the present inquiry. Less educated palates have pronounced it "peculiarly excellent, having in addition the valuable property of being tender immediately after the animal is killed, which makes it much appreciated in Central Africa, where the meat is usually as tough as shoe leather and nearly as dry." In addition to the quality

of the meat, the eland has the additional requisite of large size. A full grown eland is as large as a two-year-old shorthorn, and has far more the appearance of a high-bred bullock than an antelope. Its horns are short and straight, pointing backward, and it has a dewlap like an ox. It can live on the hardest fare, and soon grows very fat on good pasture. Best of all, it becomes quite tame, and is easily acclimatized. The writer remembers to have seen a splendid group of these animals in the Jardin d'Acclimation in the Bois de Boulogne, an old bull nearly sixteen hands high, a cow, and two young, apparently a yearling and a two-year-old. They were in good condition, though living in a paddock with only an open shed to shelter them from the weather. The late Lord Derby kept them at Knowsley Park for many years. It seems to be a waste of the resources of nature to allow these fine creatures to be exterminated, as they soon will be, in our new African empire. Why should we not save the eland, the harmless antelope, the koodoo, and other large African antelopes from extermination—and even try to rear some in England? The experiment may be recommended to some of the noble owners of parks and chases who have already done so much to preserve our own deer and wild cattle from extermination. America has allowed the bison to perish. Shall we not take warning, and preserve for our own use the splendid African antelopes which, within the memory of man, were a thousand times more numerous than they are to-day.—*Spectator.*

JAPANESE RAILROAD.—A rack railway seven miles in length is under construction on the Usni Mountain. Japan, to connect the termini of the State railway at Yokahama and Karnisawa. There are twenty-one tunnels, 12,200 feet in length in all, along the line, and the steepest grade is one to fifteen.

BOOKS.

HOW MODERN VANDALS ABUSE THEM.

During the ages which preceded the invention of printing, the owners of richly illuminated books caused them to be decorated by silversmiths and workers in inlay and enamel. Such a book represented years of patient toil, and was consequently a rare and costly object. When not in use it was kept shut up in a box almost as handsomely ornamented as the book itself. It was, without any exaggeration, a gem in a casket. Even when bound in plain leather, with iron or brass bosses, nails, and clasps, a folio edition of the Psalms or new Testament was deemed far too valuable a thing to be left lying on the altar or reading-desk of a church or cathedral. It was chained fast to the wall, hence called *catenatus*. Even long after the coming of the printing-press, books were still the objects of a certain reverence on the part of the common people. These were not allowed to handle books, for the prevailing notion was that they were intended solely for the favored few who could read and interpret them. Putting a book into the hands of a peasant would have seemed like casting pearls before swine. Hence the growth among the people of a sort of dread, mingled with superstitious fear of these mysterious things set with heavy metal clasps and kept concealed from the vulgar gaze. A book and a staff were alike the symbols of priestly power and necromancer's art. Many books were adjudged to be wicked and dangerous and ordered to be burnt by the common hangman—a proceeding which, in the eyes of the common people, augumented the mystery of the printed and illuminated page. Now, however, all this is changed. Books, large and small, are accustomed to be met with. From childhood up, rich and poor alike, are habituated to see and handle them. Their mystery has departed. This wise generation knows that there is nothing supernatural about them; that the paper is simply a film of rag or wood pulp, with inpressions of a mixture of lampblack and oil. This cheapening in a commercial sense has had a like effect in a moral sense. Familiarity has begotten contempt. To state a plain truth, books are no longer treated as well as they used to be. If this bad treatment were confined to cheap books only it would not be so deplorable. The careless reader, however, does not stop to discriminate between good and bad, rare and common. He does not hesitate to put a book to the most outrageous use, such as setting a lamp on it, sharpening his knife on its leather cover, laying fruit rinds upon it, making use of it to hold up a window, laying it down opened with cover upward, leaving it out doors all night, or trusting it into some damp place. There is still another species of devastator, to wit, the man who marks. It is quite immaterial to him how he does it. It may be with thumb nail, pen and ink, pencil, knife point, or what not. Yet, strange to say, these vandals who entertain so little respect for books absolutely assert that they do the book a service. Lamb, Coleridge, Voltaire and Montigne were transgressors of this kind, and were never happier than when scoring over the leaves with pen and ink, and this practice they followed even in the case of borrowed books. Borrowed books! Think of it! Don't you feel the blood tingle to the tips of your fingers in righteous indignation, at the thought of such a lack of respect for objects which have been so justly styled by Jules Janin "*Nos amis nos guides, nos conseils, nos gloires, nos confesseurs*"?—*The Bookworm.*

GREAT VELOCITY.—Astronomers say a shot fired on the equator of Jupiter would travel at a rotary motion with a speed 46 times greater than that of a cannon ball fired at the earth's equator.

BUFFALO LITHIA WATER

For BRIGHT'S DISEASE OF THE KIDNEYS, THE GOUTY DIATHESIS, Etc.



Dr. WM. A. HAMMOND'S Sanitarium for Treatment of Diseases of Nervous System, 14th Street and Sheridan Avenue, Washington, D. C.

Dr. WM. A. HAMMOND,

WASHINGTON, D. C.,

Surgeon-General U. S. Army (retired), formerly Professor of Diseases of the Mind and Nervous System in the University of New York, etc., says:

"I have for some time made use of the

BUFFALO LITHIA WATER

in cases of affections of the Nervous System, complicated with Bright's Disease of the Kidneys, or with a Gouty Diathesis. The results have been eminently satisfactory. Lithia has for many years been a favorite with me in like cases, but the

BUFFALO LITHIA WATER ACTS BETTER THAN ANY EXTEMPORANEOUS SOLUTION

of the Lithia salts, and is, moreover, better borne by the stomach. I also often prescribe it in those cases of cerebral hyperæmia, resulting from over mental work—in which the condition called nervous dyspepsia exists—and generally with marked benefit."

WATER IN CASES OF ONE DOZEN HALF GALLON BOTTLES, $5.00, F. O. B. HERE.

☞ For sale by all first-class Druggists, and Pamphlet sent to any address.

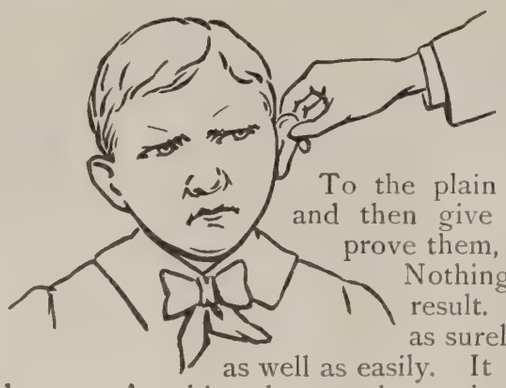
THOMAS F. COODE, Proprietor, Buffalo Lithia Springs, Va.

☞ Please mention the AMERICAN ANALYST.

BUSINESS NOTES.

COCOAS.

It is always wise to purchase goods, especially food articles, of houses whom we know all about or at least whose reputation is such, that when they tell us that their goods are pure, we are satisfied that they are. This is particularly the case with cocoas and chocolates, because there is hardly an article in the market that is more frequently sophisticated than these. Conscienceless foreigners have lately introduced cocoas here made under foreign patents, which are manufactured from such inferior raw material, that they have to add alkalis to partly saponify the fats in order that the cocoa may be soluble; they add noxious dyes and worse mordants to color them up to the standard, and then charging double price for them, spend a fortune to advertise them and depend upon the well-known bias of Americans of a certain stamp to sell these miserable goods at an enormous profit. If our readers would avoid all this let them buy the strictly pure and wholesome goods, manufactured in a cleanly way from the choicest raw material by the old and well-known firm of Walter Baker & Co., of Dorchester, Mass. Every grocer keeps these brands because the well-informed portion of the public will buy no other; they have maintained their standard of excellence for many years and are sold at fair prices. Baker's cocoa will build up and nourish the system while the bulk of this imported trash is absolutely dangerous.



Give Ear

To the plain facts about *Pearline*, and then give *Pearline* a chance to prove them, by giving it a fair trial. Nothing else will give the same result. It washes safely, as well as surely;- it cleans carefully, as well as easily. It is as cheap as soap and better. Anything that can be washed, can be washed best with *Pearline*. It lightens labor and does lightning work. As nearly as we can figure, about eight millions of women use it. Do you? You will sooner or later.

Don't Listen

To peddlers or unscrupulous grocers who offer imitations of Pearline, and say, "it is just as good as," or "the same as" Pearline. IT'S FALSE.—Pearline has no equal and is never peddled.

237 JAMES PYLE, New York.

Absolutely the Best.

It is richest in pure cream of tartar;
It is strongest in wholesome leavening power;
It has the best keeping qualities and is the most economical;
It contains no alum, ammonia or other deleterious substance;
All the ingredients used are published on the label.

Cleveland's Superior Baking Powder

Fine Table Wines

From our Celebrated Orleans Vineyard.

Arpad Haraszthy & Co.

Producers of the ECLIPSE CHAMPAGNE,

530 Washington St. SAN FRANCISCO.

GENERAL AGENCIES:

NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOSEPH R. PEEBLES' SONS CO., 73 West Fourth Street
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.

LIBRARY AID.—The State of Massachusetts has arranged to aid the 103 small towns that have no free public libraries in their efforts to secure them.

WORMS AND FLOWERS.—To keep earth-worms out of flower pots, pour on the soil a warm (80 to 90 deg. F.) decoction of quassia or wormwood and powdered horse-chestnuts. In a few moments every worm will come to the surface and can be removed.

TO CLEAN NICKEL PLATE.—To remove rust stains from nickel-plate, grease the rust stains with oil, and after a few days rub thoroughly with a cloth moistened with ammonia. If any spots still remain, remove them with dilute hydrochloric acid and polish with tripoli.

SUBMARINE ARTILLERY.—A gun to fire under water has been invented, and one for the United States ship "Destroyer" is in course of construction at Bethlehem, Pa. The experimental gun is to be 35 feet long, and will throw a projectile 25 feet in length, containing 400 pounds of nitro-glycerine, 1,000 feet through the water.

BARBARIAN FOLLY.—The princes of India are still able to indulge in royal whims and extravagances. One of them recently had made at Paris a bed worth £5,000. Its canopy is supported by four automatic female figures that wave fans to cool the air. The mattress is a huge musical box which, when one lies on upon it, plays operatic airs.

CARP CULTURE.—Three years ago C. Hachule, of Parma, Mich., purchased two carp to put in a private pond. He estimates that they will weigh from ten to twelve pounds now, and that their progeny will number 30,000. He feeds them with a barrel of bread per week, and when they are called they come to the surface in great numbers to get their rations.

THOUGHT TRANSFERENCE.—Professor Lodge, president of the section of Mathematics and Physics at the late meeting of the British Association, used the following language: "May there not also be an immaterial (perhaps an ethereal) medium of communication? Is it possible that an idea can be transferred from one person to another by a process such as we have not yet grown accustomed to, and know practically nothing about? In this case I have evidence. I assert that I have seen it done and am perfectly convinced of the fact."

A CHEMIST, 27 years of age, educated in the United States (School of Mines, New York) and Germany, wishes a situation in some chemical industry. Excellent recommendations and certificates. Address,
"CHEMIST," P. O. BOX, 3001, NEW YORK CITY.

"BILLET"

are

Carefully Selected French Sardines,

Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS.

GOITRE, or THICK NECK.

I have a positive, speedy, cleanly, harmless and almost inexpensive cure. Come or write to me at 28 Arlington Court, CLEVELAND, Ohio. It is no iodine smear. Cure made permanent.

Dr. J. CASKEY.

Armour's Extract of BEEF.

The best and most economical "Stock" for Soups, Etc.

One pound equals forty-five pounds of prime lean Beef.

Send to us for our book of receipts, showing use of **ARMOUR'S EXTRACT** in Soups and Sauces.

ARMOUR & CO., Chicago.

GRANT.

SHERMAN.

SHERIDAN.

McCLELLAN.

GEN. GRANT'S MEMOIRS.

Original $7 Edition for 30 Cents.

NO book, excepting the Bible, has ever had such a sale in the United States as General Grant's Memoirs. 650,000 copies have already gone into the homes of the rich, but the subscription price of $7.00 has placed it beyond the reach of people in moderate circumstances. **If 650,000 people have been willing to pay $7.00 for Grant's Memoirs, there must be a couple of million people in the United States who want them, and will jump at the opportunity** to buy them at the low figure here offered.

We will send you General Grant's Memoirs, publisher's original edition, best paper, cloth, green and gold binding, hitherto sold by subscription at $7.00,

FOR 30 CENTS!—FOR 30 CENTS!—ABSOLUTELY ONLY 30 CENTS!

and absolutely a proposition such as has never been made in the history of book publishing. The two splendid volumes of Grant's Memoirs, of which 650,000 copies have been already sold—not a cheap edition, but the best—for 30 cents; provided you send your subscription of $1.00 to the **AMERICAN ANALYST** one year, and also a subscription of $3.00 for the **COSMOPOLITAN MAGAZINE,** the brightest and cheapest of the great illustrated monthlies, itself equal to the best $4.00 magazine.

The **COSMOPOLITAN** is enabled to make this offer because of **the purchase of 600,000 volumes at a price which even publishers would deem impossible, and with the idea of running up its circulation to half a million copies.** By contract with the **COSMOPOLITAN,** and at no profit to us, we are enabled to offer our readers a share in the low price obtained through the largest purchase of books ever made in the history of the world.

If, however, you have Grant's books, our offer will permit you to take instead,

GEN. SHERMAN'S MEMOIRS, 2 Vols., sold by subscription for $5.00
GEN. SHERIDAN'S MEMOIRS, 2 Vols., sold by subscription for 6.00
GEN. McCLELLAN'S MEMOIRS, sold by subscription for . . 3.75

All of these are bound in cloth, green and gold, in uniform style with Grant's Memoirs.

Send us at once $3.00 for year's subscription to the **COSMOPOLITAN,** $1.00 for year's subscription to the **AMERICAN ANALYST,** and 30 cents for a set of Memoirs—$4.30 in all—to which add postage on the particular set of Memoirs selected.

WHY DO WE MAKE THESE GRAND OFFERS?

Simply because we want every intelligent family to keep well informed as to the popular science of this progressive era. We publish the **only popular journal on this subject—THE AMERICAN ANALYST.** Its subscription list is already very large; but we want at least **Fifty Thousand additional subscribers before January 1, 1892.** We know that, if we shall get them, we shall be able to hold most of them as permanent readers of our periodical. So at present sacrifice and at great cost, we have entered into a combination. The **COSMOPOLITAN** is the brightest and cheapest of the great illustrated monthly magazines; it gives annually 1,536 pages by the ablest writers, and over 1,200 illustrations by the ablest artists; and is just as interesting to the young boy or girl as to the oldest grey head. Now, then, we ask you to send us merely $4.30, and, on receipt of same, we will mail them to you regularly for **one year,** and will also send you (making no charge for the books) a set of **GENERAL GRANT'S MEMOIRS,** or either of the other works that you may select. **NO SUCH OFFER AS THIS WAS EVER MADE BEFORE BY ANY PUBLISHER SINCE TIME BEGAN!**

UNLESS OTHERWISE DIRECTED,

we shall invariably ship the books by express, charges to be paid by the receiver. If you wish the volumes forwarded by mail, you must distinctly say so at the time when you send us your address and the Money; and you must also enclose postage to prepay the packages at the following rates: **GRANT'S MEMOIRS,** 96 ozs., 48c.; **SHERMAN'S MEMOIRS,** 92 ozs., 46c.; **SHERIDAN'S MEMOIRS,** 84 ozs., 42c.; **McCLELLAN'S MEMOIRS,** 48 ozs., 24c. The government rate for postage on books is one-half cent per ounce. The **COSMOPOLITAN** and **AMERICAN ANALYST** are sent to subscribers free of postage.

SEND ALL ORDERS ADDRESSED

THE ANALYST PUBLISHING CO.,

19 Park Place, New York.

HARTSHORN'S SELF-ACTING SHADE ROLLERS

NOTICE SCRIPT NAME OF Stewart Hartshorn ON LABEL, AND GET THE GENUINE HARTSHORN

THE New Model "HALL"



A Perfect Typewriter. Best Manifolder. Terms to Agents Liberal. Portable. Inexpensive. Writes All Languages. *Read Mr. Howell's Opinion.*

"I wish to express my very great satisfaction with the Hall typewriter. Impressions and alignment are both more perfect than any typewriter that I know, and it is simply a pleasure to use it. It is delightfully simple and manageable."

(Signed) W. D HOWELLS.

Send for Catalogue and Specimens of work.

Address N. TYPEWRITER CO., 10 Temple Pl., BOSTON.

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,

HOWARD STREET, BOSTON, MASS.

SWIFT'S

CHOICE

Chicago Dressed Beef

AND

MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,

UNION STOCK YARDS,

CHICAGO, ILLS.

EVERY one in need of information on the subject of advertising will do well to obtain a copy of 'Book for Advertisers," 368 pages, price one dollar. Mailed, postage paid, on receipt of price. Contains a careful compilation from the American Newspaper Directory of all the best papers and class journals; gives the circulation rating of every one, and a good deal of information about rates and other matters pertaining to the business of advertising. Address

ROWELL'S ADVERTISING BUREAU,
10 Spruce St., New York.

$5, $10 and $20

CONFEDERATE BILLS,

only five cents each. AGENTS WANTED.

SOUTHERN STAR, Atlanta, Ga.

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

BROMO SODA.

Useful in Nervous Headache, Sleeplessness, Excessive Study, Over Brainwork, Nervous Debility, Mania, Etc.

DOSE—A heaping teaspoonful in half a glass of water, to be repeated once after an interval of thirty minutes, if necessary. Each teaspoonful contains 30 grs. BROMIDE SODIUM and 1 gr. CAFFEIN.



SUPPLIED BY ALL DRUGGISTS

Ask for (Bromo-Soda, Warner & Co.) and take no other "Bromo."

Pure LAGER BEER,

"IMPERIAL" and "CULMBACHER"

Brewed & Bottled SPECIALLY FOR HOTELS, CLUBS AND PRIVATE FAMILIES BY

Beadleston & Woerz

291 W. 10th St. New York.

Orders by Postal Card promptly attended to.

We can save you Fifty Dollars when you Build. See



A complete set of Plans to build from, simply state about price of dwelling desired. 25 cts. in stamps. Our book "Beautiful Homes." 25 cts. Our monthly book "The National Builder," 25 cts. Address

The National Builder, Adams Exp. Bldg., Chicago, Ill.

BLAIR'S PILLS.



Great English Remedy for GOUT, RHEUMATISM and KIDNEY COMPLAINTS.

SURE, PROMPT and EFFECTIVE.

Large Box, 34; Small, 14 Pills.

At all Druggists, and

224 WILLIAM STREET, NEW YORK.

THE ORIGINAL AND GENUINE (WORCESTERSHIRE SAUCE).



LEA & PERRINS' SAUCE

In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—

Lea & Perrins

Beware of Imitations; see that you get Lea & Perrins'

For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS. NEW YORK.

RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,
184 Greenwich St., N. Y.

25c. THE DAISY STAMPING OUTFIT. 25c.

STAMPING BY AN ENTIRELY NEW PROCESS. No more ironing or cleaning of patterns, no powder to use. Our Outfit has **OVER FIFTY NEW DESIGNS**—Children, Birds, Animals, Flowers, Leaves, Ferns and Mottoes in great variety; Borders in rich styles, and a complete Alphabet, together with a bottle of **STAMPING FLUID**, which makes an instantaneous impression, and is absolutely certain, cleanly and easy to use. Every lady can do her own stamping at home. **GREATEST BARGAIN EVER OFFERED.** No other outfit has this Patent Fluid. Designs **SUPERIOR** to many outfits sold for $1.00. We will sell this wonderful Outfit, for a short time only, at **25c. POSTPAID** to advertise our other goods. Send at once. We fill orders promptly. Address

EUREKA MANUFACTURING CO., Hinsdale, Ills.



GOLD MEDAL, PARIS, 1878.



W. BAKER & Co.'s Breakfast Cocoa

from which the excess of oil has been removed,

Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

TABASCO PEPPER SAUCE,

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced by connoisseurs to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY'S SON,

NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

ESTABLISHED IN LONDON, 1831.

DEAN'S PATENT Ardenter Mustard





both for table and sick room

W. G. DEAN & SON,
361 & 363 WASHINGTON STREET; 84, 86, & 88 NORTH MOORE STREET, N.Y.

AMERICAN ANALYST CLUB RATES.

WE have made arrangements by which we can furnish to our readers any of the periodicals named below at a club rate, with the AMERICAN ANALYST, at a considerable saving. Should any periodical not mentioned be desired, or several of the journals, drop us a postal card and we will give you a rate promptly. For sample copies address the publishers. Terms strictly cash, in advance.

	Publishers' Price.	Our Price, including AMERICAN ANALYST. One Year.
Arthur's Home Magazine	$1.50	$2.35
Babyhood	2.00	2.50
Century Magazine	4.00	4.50
Christian Herald, N. Y	1.50	2.00
Christian Union, N. Y	3.00	3.50
Cosmopolitan Magazine (See our Premium Offer.)	3.00	3.25
Cottage Hearth	1.50	2.00
Current Literature	3.00	3.50
Demorest's Magazine	2 00	2 50
Family Story Paper	3.00	3.25
Farm and Fireside	.50	1.40
Fireside Companion	3.00	3.50
Forum	5.00	5.25
Frank Leslie's Illustrated Newspaper	4.00	4.50
" " Popular Monthly	3.00	3.50
Garden and Forest	4.00	4.25
Godey's Ladies' Book	2.00	2.50
Golden Days	3.00	3.50
Good Housekeeping	2.40	3.00
Harper's Bazaar	$4.00	$4.50
" Young People	2.00	2.50
" Weekly	4 00	4.25
" Magazine	4.00	4.25
Home Magazine (Mrs. Logan's)	.50	1.25
Judge	5.00	5.00
Ladies' Home Journal	1.00	1.75
Ledger, New York	2.00	2.50
Life	5.00	5.50
Lippincott's Magazine	3.00	3.25
Magazine of American History	5.00	5.00
New York Weekly	3.00	3.50
Our Day, Boston	2.50	3.25
Outing	3.00	3.50
Peterson's Magazine	2.00	2.50
Popular Science Monthly	5.00	5.25
Puck	5.00	5.00
Review of Reviews	2.00	2.75
Scientific American	3.00	3.50
Scribner's Magazine	3.00	3.25
Youth's Companion	1 85	2.50

ADDRESS **THE ANALYST PUBLISHING CO., 19 Park Place, New York.**

A BUSINESS BENEFIT.

ADVANTAGES TO ADVERTISERS OFFERED BY THE "AMERICAN ANALYST."

It has not the limitations of a daily paper. No one reads yesterday's paper. A monthly lives at least a month, while a weekly is fresh four times a month, and its audience is not limited by geographical lines, but the circulation is all over the United States and Canada.

It contains matters of interest to everyone, especially the ladies of the household, and is, therefore, sure of a careful perusal. Our audiences are intelligent and of the better classes, who have money to spend, and any well worded advertisement in our columns, giving real information, will receive a careful perusal.

Our rates are as low as our circulation affords. Large circulation and original matter cost money and those advertisers who desire to realize these benefits must expect to pay reasonably for them.

Advertisements in our columns are permanent. Most of our subscribers bind their numbers.

Our advertisements are set up in an attractive form, sure to call the attention of the reader.

Anything that our readers want, or for which a demand is to be created, not wholly of a local nature, will pay to advertise with us.

We take only advertisements from legitimate houses of really meritorious goods, and give them all the editorial assistance they deserve; consequently our readers knowing this, have confidence in advertisements contained in our columns.

The fact that we have the best and largest houses in every branch of trade advertising with us, and that they always renew as their seasons arrive, proves beyond a doubt that they have found the AMERICAN ANALYST a good advertising medium. Why should not you?

INSTRUCTIONS TO SUBSCRIBERS.

The Names of all Subscribers are registered as soon as received, and paper is always promptly forwarded.

Postage.—The postage to all parts of the United States and Canada is paid by the publisher.

Remittances of small sums may be made with comparative safety in ordinary letters. Sums of one dollar or more must be sent by registered letter or P. O. money order, otherwise we cannot be responsible for same. Silver must not be sent in a letter.

Postage Stamps will be received for the fractional part of a dollar, and in any amount when it is impossible for patrons to procure bills, but you must send one or two-cent stamps only.

SUBSCRIPTIONS.—The AMERICAN ANALYST will be sent one year to any subscriber for ONE DOLLAR. New subscriptions can begin at any time.

We Stop the Paper at the expiration of the time paid for unless a renewal of subscription is received. Those whose subscriptions have expired must not expect to continue to receive the paper unless they send the money to pay for it.

Change of Address.—Subscribers wishing their addresses changed must invariably give their former as well as new address.

Missing Numbers.—It occasionally happens that numbers of our paper sent to subscribers are lost or stolen in the mails. In case you do not receive any number when due, write us a postal card and we will cheerfully forward a duplicate of the missing number.

Most Important of All.—In every letter that you write us, never fail to give your full address, plainly written—name, post-office, County and State.

Address all letters to

THE ANALYST PUBLISHING CO.,
19 Park Place, New York.

GLENN'S
SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,

C. N. CRITTENTON,
115 FULTON STREET,
NEW YORK.

IF you wish to advertise anything anywhere at any time write to
GEO. P. ROWELL & CO.,
No. 10 Spruce St., New York.

ARROWHEAD HOT SPRINGS,
CALIFORNIA.

I MOST respectfully invite physicians of the East to write to me for information concerning this famous Southern California resort. The hot mineral water mud baths, and climate are unequalled in America. Diseases of the throat, lungs, liver, stomach and kidneys, nervous and skin troubles and rheumatism, are the ailments successfully treated. The hotel contains 125 rooms, is first-class, and lighted throughout with incandescent lights. Elevation 2,000 feet. Address,

H. C. ROYER, M. D.,
Arrowhead Springs, San Bernardino Co., California.

The Family Herald,
ISSUED EVERY MONTH,
A CLEAN AND INTERESTING STORY PAPER,
FOR OLD AND YOUNG.
Single Copies, 5c. Twelve Months, 50c.

ADVERTISING RATES.

One page—4 Columns—48 inches,	$40 00
Half page—2 Columns—24 inches,	25 00
One column—12 inches,	15 00
Half column—6 inches,	9 00
One quarter column—3 inches,	5 00
One eighth column—1½ inches,	3 00

THE FAMILY HERALD,
124-132 CANAL STREET, CINCINNATI, OHIO.

"*Printers' Ink*," that great authority on advertising, says, "A well-made advertisement placed in a humorous paper is like a well-made hat. It wears well." "Results are often obtained after your advertisement has been discontinued for months. A humorous paper never dies. It is read and re-read by all the members of a family, and visitors find pleasure in perusing its columns."

WHY NOT
—OWN AN ILLUSTRATED NEWSPAPER—
TO ADVERTISE YOUR BUSINESS?

Did you know it could be done at moderate cost? Particulars and samples of humorous papers free to any responsible firm. **PICTORIAL WEEKLIES CO.**
28 West 23d Street, New York.

Mr. Gibbs, of the National Cash Register Co., says since publishing their own paper "The Hustler," their business has increased 300 per cent.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 47. NEW YORK, THURSDAY, NOVEMBER 19, 1891. WHOLE No. 247

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - $1.00 per year.
Single Copies, - - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.
Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.
Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,
H. LASSING, M. D., T. P. McELRATH, *Editors.*
No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

American Citizenship 556
Autumn Leaves 554
Bright Stories.
A Mystery of the Mind 556
Bubbles and Foam 555
Compressed Drugs 559
Domestic Dietetics 557
Editorials 553
Music by Telegraph; Should Women Vote? Law-Protected Piracy.
European Soap 557
Menus 554
Old Age 555
The Columbian Exposition 558

MUSIC BY TELEGRAPH.

An inventive genius in Austin, Texas, named Hachenberg, has devised a scheme for the simultaneous performance of ten piano-fortes at widely distant points, the manipulation of the keys being transmitted by electricity. The main features of the projected system of musical telegraphy are as follows: The electrical connection of ten pianos for concert purposes, to be operated upon by one player, either individually or collectively. The electrical connection of ten organs for church music, operated in like manner. The reproduction of electro-music at a distance. The electro-musical hall for operatic music, etc., where a great number of musical instruments may be electrically connected, or rather incorporated with the entire inside lining of the building. Electro-automatic music, by transferring the music from an ordinary music box (properly prepared) to the ten pianos. The expression of this class of music is governed by a key-board to be described hereafter. Other combinations are suggested, as of bells, glass and other metallic contrivances. Electro-bell music could be made very attractive, it is claimed. To connect electrically ten pianos, and to operate on them with the best effect, the combination has two key-boards—one that is adjusted to the instrument occupied by the pianist—and has as many keys as there are keys in the piano. By means of this key-board electrical connection is secured with any number of pianos in the circuit. Not to impose new duties on the pianist in playing on these instruments, another key-board of ten keys is under the supervision of a musical director, who makes and breaks the electrical connection between the ten pianos for the purpose of regulating the volume and expression of music. The ten pianos can be played upon simultaneously, or the most rapid run of notes can be secured without taking two successive notes out of the same instrument. By placing these ten pianos in a certain position, the notes reaching the tympanum from different points give the music a timbre said to be both grand and peculiar. The next step, we presume, will be to project the auditory mechanism of the audience by telegraph to the central point of musical distribution, and while the individual is being thus delighted with concord of sweet sounds his other faculties may be otherwise employed. Such an arrangement will be convenient and economical, but its consummation may be somewhat deferred.

SHOULD WOMEN VOTE?

The AMERICAN ANALYST calls attention to the resolutions recently passed by the Working Women's Society apropos of the desire of women to vote. These ladies claim that disfranchisement is a burden too heavy for any class of people to bear, and that poverty, made worse than it would otherwise be by such disfranchisement, compels over a hundred thousand working women in New York City alone to toil on starvation pay. Their appeal to the Legislature, however, will be useless. Men love to make laws which enable them to retain their supremacy.

That is the opinion expressed by the astute journalist, Howard, in his contribution to the *Recorder* on November 11. We fear that his apprehensions are well founded. Judging from the class of men who compose our law-makers, there is little likelihood of the elective franchise being tendered as a matter of either courtesy or right to the female sex. But, after all, the proportion of women who really want it is considered to be very small. It would seem to be an equitable adjustment of the subject to bestow the privilege of voting on unmarried women, or those who are heads of families and property holders. Taxpayers should, of course, have a voice in the selection of the officials who regulate the burdens they are to bear. But the home is a higher sphere for women's effort than the primary and the voting booth; and under existing conditions the good being of society seems to demand that she should prefer to adorn the former rather than weaken her power in efforts to reform and uplift the latter.

LAW PROTECTED PIRACY.

The manner in which the clumsy patent laws of the present time operate to place inventors at the mercy of designing intruders is eloquently stated by Mr. Thomas A. Edison, in a recent interview. Mr. Edison's discussion extended over the whole range of electrical progress, but the abbreviation we give herewith of his comments on the perils and vicissitudes of inventors will be found especially significant. Among other things Mr. Edison said: "The people suppose I have made money out of my inventions. The truth is I have never made one cent out of my inventions. All I have made has been out of manufacturing. My inventions have not been protected by the patent office. The companies with which I am connected have spent millions in trying to defend them. I have spent about $600,000 myself, and I believe I would be $600,000 better off if I had never taken out a patent. What I have made has been because I have understood the inventions better, and have been able to manipulate the manufacturing of them better than the pirates. I could not have made anything had I not large capital back of me, and the ordinary inventor has no protection whatever. His certificate of patent is merely a certificate to the poor-house, and hundreds of inventors are ruined. They spend all they have in getting out their inventions and they die poor. Let me tell you how it works. The inventor has a good thing. He takes out his patent, thinks he is safe, and organizes a plant to manufacture it. He has to have special machinery and he makes special experiments, and, like as not, it costs him $200,000 before he is ready to begin to manufacture. The pirate sees he has a good thing. He decides to compete with him, organizes a company with no responsibility whatever, bribes his men, and starts in opposition. He can in most cases now put up for $50,000 what has cost the inventor $200,000 and he feels that in a few years he can make enough to retire, having gotten the cream of the invention. He begins to manufacture. The inventor prosecutes him, but the court takes three years before they will hear his case. If they decide against him he carries it to the Supreme Court, which is three years behind-hand, and it is from six to twelve years before he can get a final decision. By this time the pirate has made a fortune and the original inventor is in most cases bankrupt. If the case is decided in his favor the pirate is found to be irresponsible and there is no chance for the inventor. What the courts should do is to prevent the pirate from manufacturing until he can prove that he has a right to manufacture. The original inventor, the man who has the papers, the man who has spent his money, should be given the benefit of the doubt.

READ PAGE 562.

When this is done our inventors will have some protection. Then invention will increase in the United States. The country will jump a generation in a decade and eveything will hum."

MENUS.

KITCHEN FRENCH REDUCED TO COMMONPLACE ENGLISH.

The French of the Nineteenth Century chef is not the French of our text books, nor yet the everyday language of Parisian drawing-rooms, but an idiom of the kitchen which we have appropriated with as much readiness as we have the Worth styles, the Sardou plays, the De Maupassant novels and other triumphs of Gallic genius, for it is idle to question the culinary supremacy of a nation that has been accustomed to send its princes and kings into the kitchen as well as under the guillotine. And a few hints regarding the interpretation of this culinary vocabulary may be of assistance to a better understanding of the amiable art of the saucepan. While the Roman epicure began with the egg and proceeded on to the apple, it becomes necessary for us, in obedience to the rule of the French, to begin with the oysters, which, when served in the shell, appear as huitres a l'ecaille, or en demi coquilles. Further on, among the entrees, may be found huitres marinees or picles (pickled oysters), and the small oyster patties known to the cook as bouchees aux huitres, or "mouthfuls" of oysters. Huitres en brochette and huitres frites are respectively broiled oysters and fried. Of names for soups the French cook has a most interesting variety. His general term of potages is etymologically our "pottage," and once meant anything that went into the pot. Strictly, it should be a clear soup. A puree (Latin piperata—"peppered") is a thick soup, made usually of meat, fish or vegetables, boiled to a pulp and strained through a sieve. A bisque (from bis-cuit—"twice cooked") is a soup made of fish, properly of shellfish, boiled and strained. A consomme, the "consummation" of soups, is a clear broth, the result of long-continued boiling. Bouillon is distinctively a "boiled" soup. Then there is the term soupe, a word of German origin applied originally to a thick stew, which, when of vegetables, was called soupe maigre, and when of meat, soupe grasse. Our pea soup becomes puree de pois on the menu, and chicken broth is bouillon de poulet. Soup a la tortue is turtle soup, and consomme de faisans, pheasant consomme. Potage a la printanier is "springtime" soup. Poisson is fish, from the Latin piscionem, and it is curious to note that the phrase poisson d'Avril (April fish) is the French term for an April-fool joke. The names of fish are ordinarily in English on the bill of fare, but to this rule there are numerous exceptions. Ecrevisse, from which we derive our crayfish, is crab, and a crevette is a shrimp. Anchovies, the diminutive fish of the Mediterranean, appear as anchois. Homard is lobster; tortue, turtle; truite, trout: saumon, salmon; and esturgeon, sturgeon, the fish that "stirs" up the mud. An accolade d'anguilles is a brace of eels, and les abbettes is the name that disguises our whitebait. Mackerel, the "spotted" fish, is maquereau, merluche is haddock, and morue is cod. Escargots are snails. For meat the general French term is viands, and this, according as it is roasted, broiled, fried in butter or boiled, is rote, grille, frite, sautee, or bouille. Rissolee is meat roasted to a turn, and when baked it is cuit au jour or au'broche. Stewed meat is cooked en compote or en ragout. Beef the French call boeuf; boeuf a la mode is beef prepared "in the fashionable way." Biftek and rosbif are words borrowed from John Bull, and their meaning is obvious. Veau, means veal; agneau, lamb, and mouton mutton. A gigot d'agneau is a leg of lamb, and a poitrine de veau a calf's breast. Jambon is ham, and pork chop is a cotellette de porc, literally a pork cutlet. Bacon is lard, and when a piece of meat is "larded" it is pierced (pique) with thin strips of bacon. Thus a fillet of beef, larded, with mushrooms, would appear on the menu as Filet de boeuf pique aux champignons. A selle de venaison is a saddle of venison, literally a seat (our "haunch") of venison. Rognons are kidneys, and foie liver. A pate de foie gras, the Strasburg pie of the Germans, is really a "pie of fat liver." Hash is hachis, akin to the Scotch "haggis." Of vegetables the French make two general divisions, vegetables and legumes, the latter term embracing all such vegetables as can be gathered by picking (Latin legere, to pluck), such as laitue (lettuce), asperges (asparagus) and epinards (spinach). In general this appellation covers all "greens." Petis pois are green (literally small) peas, pommes de terre (earth apples) are potatoes, haricots, beans, panais, parsnips, and artichaus articokes. Riz is rice, which should not be confounded with ris de veau (sweetbreads); champignons are mushrooms, oignons onions, chou cabbage; and choufleur, cauliflowner. Our despised "love apples" of a few generations ago, the tomato, is tomate, and celery is celeri. Vermicelli is, of course, vermicelli, the "little worms" of the Italians. Concombres en tranches are sliced cucumbers. Fowls are indicated on the menu by the general designation of volaile. A poulet (our "poulet") is a chicken, and poulet d'Inde (Indian chicken) was the old name for turkey, now currupted into dinde. Allerous de dinde are turkey wings, and dindon a la broche is roast young turkey. Chapon is our capon; oie, goose, and canard, duck. Wild duck is canard sauvage. Becassines are snipes, cailles quail, and faisans pheasants. Grouse is borrowed from our grouse, which is sometimes called also co de bruyere, the heathen fowl. For those articles of diet that we include under the comprehensive designation of "side dishes," or "made dishes," the French artist de cuisine has a variety of names in which he achieves a triumph of nomenclature. Besides entrees he has releves ("removes"), hors d'œuvres ("outworks") and entremets ("intermissions"), the latter having the subdivision of entremets sucres ("sweet intermissions") that include a good portion of the desserts. It is in this branch of the menu that the epicure finds the most attractive exhibitions of the chef's skill—such as the bouchee ("mouthfuls"), galantines ("snowdrops"), and chaufroids (literally "hot-colds"). Chaufroids de perdreaux are cold glazed fillets of partridges. Hors d'œuvres include the light entrees like sweetbreads, crqouettes, patties, hashes of game, macaroni, etc., and the pungent entrees, such as sardines, pickles and other appetizers. Entremets embraces vegetables, the lighter kinds of salads, omelets and other preparations of eggs. When marked sucres, they comprise puddings, cakes, compotes and other sweet dishes. Omelets, by the way, come from œufs meler (mingled eggs). An omelette aux fine herbes is made with parsley, etc., and if it is aux confitures (preserves), it contains jelly or other sweets. An omelette soufflee is a "blown up" omelet. A salade is a "salted" dish (Latin sal, salt), originally, and a fricassee was at first simply a "fuz." Salade de raison is made of the greens that are "in season." Farcie is stuffing, the "force" meat of our cooks. A salmis is an elaborate hash of game or poultry, and a vol-au-vent is a sort of patty of game hash. Quenelles are delicate preparations of stuffing, and timbales are cups. Pate is the common term for pie, and pattisserie is pastry. In its original sense the word meant a "paste," like our pastry. Pudding is a distinctly English word that the French have appropriated and transformed into pouding. Our plum pudding appears on their dinner tables as pouding aux raisins de Corinthe. Raisins are grapes, and raisins de Corinthe are our currants. Raisins sec are raisins as we know them. Some other French names of fruits are prunes (plums), pruneaux (prunes), and poires (pears). Fraise, from which our proper name Fraser comes, is strawberry, and ananas are pineapples, suspiciously like the bananas (bananas). Cerise are cherries from Cerosus, in Asia, where Lucullus is reputed to have found them and introduced them into Western Europe. Compotes are stewed fruits, and confitures are preserves. Glaces (our "glaze") is the name applied to candied fruits and its fancy confections (glaces fantaisies). Biscuit is often a pudding, biscuit glaces being rendered "frozen pudding," and gateaux assorties are assorted cakes. Small cakes are also known as petits fours. Sorbet is sherbet, from the Arabic word that means "something todrink," and fromage, of course, is cheese.—*Advertiser.*

AUTUMN LEAVES.

HOW TO PREPARE THEM FOR PRESERVATION.

A few absolutely perfect leaves are better than the scores of common ones that we are tempted to collect. The leaves of the hard maple are always gorgeous in hue and delicate in outline. Those that wear the deepest tints of crimson or yellow are best for our purpose. Oak leaves are shiny and firm, and easily preserved. Nature has always been prodigal to the beech tree, scattering on her boughs the richest, brightest colors. The sumac glows with vivid crimson, and a clear amber shines through the dainty larch and chestnut leaves. Then there are the dull chocolate and mottled red of the blackberry vines, while the poplar and the aspen shine out with a silvery white, all speckled over with touches of green. Gather these wild wood beauties, says *Good Housekeeping*, with as much care as would be bestowed upon a bouquet of garden blossoms, and hasten home with them before they begin to dry and curl. Upon reaching home let the first care be to have two hot irons ready. Cover the kitchen table with three or four layers of newspapers, over which fasten smoothly a soft cotton cloth. Have at hand a lump of beeswax, tied in a small bag, and a similar package of resin. Now smooth out a leaf with the hand, rub the beeswax lightly over the iron, letting the hot, smooth surface glide quickly over the leaf, first on the upper and then on the lower side, pressing a little more firmly a third and fourth time, until the leaf is thoroughly dry. The glowing colors will be firmly fixed, and will never fade unless exposed to the sunshine. Having treated all the leaves in a similar manner, they are ready for the resin, or "the finishing process." With a moderately hot iron, which must be lightly and rapidly rubbed over the bag of resin, go over every leaf, first on the upper and then on the lower side. This gives them a brilliant, hard, glossy finish that makes them almost indestructible. Many persons complain that the glossy appearance is unnatural. While this is true, to some extent, yet the protection given by the coat of resin could be obtained in no other way. To preserve small branches, and boughs with leaves, one must proceed in the same manner, pressing the limbs and twigs with the iron until dry, being careful to avoid the point where the leaf is attached, as too much heat just there will cause it to drop off instantly. To achieve perfect success, be sure to take the leaves when freshly gathered. When the work has been finished, spread a number of newspapers upon the floor of some unused room, and there place the treasures. Give them plenty of space, so that they will not touch or stick to each other. Cover them entirely with more papers, and let them remain in this cool, dark seclusion until ready to decorate the rooms, or otherwise use them as things of beauty and joy. Reserve a few of the brightest and more perfect specimens for the holiday times, when they will come out of their darkness so beautiful that they who see them will have no longing for summer flowers, but will revel in the unfaded glories of the autumn leaves.

OLD AGE.

IS THE DURATION OF HUMAN LIFE DIMINISHING?

The type of essay *De Senectute*, of which Cicero gave us the model, is not much affected now. Perhaps the Roman orator exhausted the sentimental and philosophic side of the subject. At any rate, the view of old age which most interests moderns is not how to enjoy it, but how to get and prolong it. Perhaps this is really the essential thing, since it appears as if, despite sanitation and all our modern improvements in living, old age is gradually slipping away from us. It is true that we have immensely lessened infant mortality and extended the mean duration of life to over forty-five years. But the average number of old people is not correspondingly increased, and it is even charged that when great old age is now reached, it is abnormal, and the evidence of a deep-seated neurosis whose penalties are visited on succeeding generations. The foregoing statements are not vague generalizations, but based upon carefully collected vital statistics. Sir James Crichton Brown, in a recent address on old age, states that since 1859, in Great Britain, the decline in the death rate has been 17.5 per cent. at all ages under fifty-five, and only 2.7 at all ages above fifty-five. Between the years sixty-five and seventy-five there has actually been an increase in the death rate. The cause of this increment in later death rates is attributed to cancer, heart diseases, nervous diseases, and kidney diseases. These diseases are mainly of the degenerative class, and due to the wear and tear of modern life. This is shown by the fact that the death rates after forty-five are less among women, and less in the country than in the city. Dr. Brown gives us the further discomforting reflection that men and women are growing old before their time. "Old age," he says, "is encroaching on the strength of manhood, and the infirmities associated with it are stealthily taking possession of the system some years earlier than they were wont to do in former generations. Deaths due simply to old age are now reported between forty-five and fifty-five years of age, and in large numbers between fifty-five and sixty, and there has been a reduction in the age at which atrophy and debility — another name for second childishness—kill those who have passed middle life. Presbyopia, or the long-sightedness of old age, in which near objects cannot be distinctly seen unless held at a considerable distance from the eye, is believed by some experienced ophthalmologists to begin, as a rule, rather earlier than it used to do. No trustworthy statistics on the subject exist, and of course general impressions ought to be received with caution, for it must be difficult to distinguish how far the early recognition of ocular failure in these days is attributable to the increased care bestowed on the eye, and how far it should be ascribed to untimely invasion, but I certainly attach great weight to the opinion of Mr. Critchett, who says, 'My own experience, now extending over a quarter of a century, leads me to think that both men and women now seek aid from glasses at an earlier period of life than their ancestors.' Very significant also is the statement of Mr. Brailey that 'people who have lived long in hot climates like India become presbyopic four or five years earlier than they would otherwise have done,' for life in a hot climate really means excessive wear and tear to a European. The ordinary age for the adoption of spectacles for reading used to be fifty; it is now, I believe, nearer forty-five." The teeth are dropping out earlier, baldness is more prevalent, senile insanity is more common, and appears sooner than it used to do; suicide is increasing, and most suicides occur between the age of forty-five and sixty-five. This is rather a doleful outlook, and one naturally seeks to know if Dr. Brown has a remedy for the ills he portrays. "There is," he tells us, "no short cut to longevity. To win it is the work of a lifetime, and the promotion of it is a branch of public medicine. Perhaps one of these days we may have an International Congress on Old Age, with an exhibition of dotards for warning, and of hale and hearty centenarians for encouragement. At any rate you may rest assured that it is by steady obedience to the laws of health that old age may be attained, and by judicious regimen that it may be prolonged." This is all very true, but, unhappily, it has been well known since the days of Hufeland. Perhaps the best and only thing that we can do is to teach children more earnestly the fact that to enjoy the last half of life they must take care of the first half. The maxim, "*Dum vivimus vivamus*" is the one which above all makes old age a sickly and unhappy one.—*Med. Record.*

BUBBLES AND FOAM.

J. L. WILLIAMS, IN "POPULAR SCIENCE NEWS."

The bubbles of imprisoned air seen floating on the surface of disturbed water, and their final product, foam, proceed along quite definite and fixed lines of development. Their sizes present great differences at the time of their formation, and they continue to undergo incessant changes down to the period of their final disintegration. The sizes of bubbles in all liquids, so far as observed, vary as the intensity of the commotion which produces them. This is true up to a certain point, but the maximum of size is speedily reached, and, no matter how great the commotion beyond that point, larger bubbles will not be formed. Although the sizes of bubbles do not readily admit of exact measurements, yet there seems to be good reason for believing that they vary with the temperature of any given liquid, and in different liquids at the same temperature. Hot water seems to be more favorable to the formation of large bubbles than cold, and they persist longer. I believe that cold water, on the other hand, is more favorable to the production of large crests and masses of foam. Such masses seem to be much more abundant at the bases of waterfalls in winter than in summer. This fact may, however, be due to the greater volume of work, and the more favorable conditions for the generation of foam presented by icicles and irregular surfaces of broken ice. The larger size and longer duration of bubbles in hot water is perhaps to be explained in part by the diminished surface tension resulting from a lighter specific gravity, though our ignorance of thermal hydrostatics is too profound to sanction any authoritative statement. That bubbles have different maximum sizes and periods of duration in different liquids is familiarly shown in water which has been rendered viscous with soap. The bubbles are much larger and last longer than in pure water. Even the hard waters of wells cannot be chafed into foam of any appreciable duration, no matter how vigorously they are beaten; while river water laden with surface impurities forms even in the smaller rapids flakes of foam as large as a silver dollar. The genesis of foam from bubbles is a very interesting process. It may be beautifully illustrated by the following simple experiment: Place a little warm water in a basin and rapidly stir it with a cake of soap until a suds is formed. The following facts may then be observed: The suds when first formed consists for the most part of small vesicles, interspersed here and there with large bubbles. These last are quite evanescent, bursting by the rupture of contiguous smaller ones, producing a half crackling, suppressed roar, somewhat like the sound of distant breakers. There is a zone of very small vesicles where the suds comes in contact with the basin, and others of intermediate size interspersed over the surface. The sizes vary all the way from that of a large cuff-button to the point of a pin. If left undisturbed, the larger sizes collapse one by one until the whole mass presents quite a uniform aspect. If, now, this be vigorously restirred, new bubbles, larger than the largest of the first stirring, are formed, but they exist only a few seconds at longest. Their brief existence is probably due to the greater tenuity of the film. I have observed suds, however, in which such bubbles persisted for several minutes. By the rapid collapse of the larger bubbles a uniform size is soon attained once more. Repeated stirrings will produce fewer large bubbles each time, and finally the most vigorous chafing will produce none at all. Meantime, the surging noise has also subsided. The whole mass has a fleecy whiteness; it has reached a condition of partial equilibrium; in other words, it is foam, and will continue to be so until it evaporates and disappears. Foam, then, is a direct product of the continuous subdivision of bubbles, and is formed in nature by the chafing of water against resisting surfaces. A process similar to the one just described is employed in making cake-frosting. In this case the resulting froth consists of minute vesicles of albumen. Not all foam, however, is produced by friction. In the evolution of gases in alcoholic fermentations, and in the froth of soda water produced by the escape of carbon dioxide, there is no visible friction concerned. It would seem that the bursting of bubbles is due in part to evaporation. Movements and tremors are also visible on their inner surfaces before collapse, as if subject to intense strains from within. Doubtless in disturbed water and near resisting surfaces there are tangential pulls which hasten the rupture. This is rendered all the more probable by the existence of a zone of small vesicles (in the experiment) next to the sides of the vessel, where the reaction between the elastic, shrinking mass and the inelastic vessel is most intense. In the case of solitary bubbles, probably the energy of surface tension, combined with a slight excess of pressure of the imprisoned air, hastens the collapse. In aggregate bubbles, as in river foam, there are a number of causes which doubtless conspire to effect their dissipation. Certain it is that such aggregates move down stream a little way only, and then disappear. Generally there are two or three bubbles of considerable size in the centre of the foam flakes, and these are quite liable to burst and produce the instantaneous disintegration of all, when the flakes gyrate round and come to rest in a quiet part of the stream. This is the most common mode of disappearance; but more frequently the foam coming down in irregular patches acquires a rotary movement, and the peripheral vesicles moving more rapidly than the central ones are either thrown off by centrifugal impulses, or wheel around upon the centre and produce mutual destructions. Still another cause of dissipation is the collision of two flakes, generally resulting only in a destruction of peripheral vesicles, and giving birth to two or more new independent aggregates. Oftentimes quite large flakes of foam will ride over several considerable ripples unchanged, and will suffer instantaneous rupture in smooth and quiet water. Cataracts, riffs, billows and breakers all form bubbles and ultimately foam. In all cases except the first they are formed by the backward movement of a crest or spray which entraps the air. The existence of all bubbles in free water is of exceedingly brief duration. It may, however, be prolonged by various devices. Bubbles formed on water, the surface of which has been covered by a film of petroleum, often exist for an indefinite period. The reason seems to be that the viscid oil abolishes the energy of surface tension, which we have seen to be such an important factor in the rupture of bubbles. Bubbles produced by the respiration of aquatic animals, or any other evolution of foreign gases, generally rise as a series of ebullitions, several forming at a time and moving radially from the centre of disturbance. The bubbles ascend so rapidly from below that their reflecting surfaces appear like glistening rows of pearl beads or superimposed hemispheres. Very different in origin, though similar in appearance, are the columns of effervescence which rise in boiling water. They are simply waves of rarefied water which ascend to the surface. Foam may, however, form in this way by the air becoming entrapped at the surface, as it does on sap-vats when intense heat is applied.

BRIGHT STORIES.

A MYSTERY OF THE MIND.

JULIAN HAWTHORNE, IN PITTSBURG "BULLETIN."

I landed in Southampton on the 14th of November, 1872. It was late of a Saturday afternoon, and by the time my baggage was at the railway station there was barely time to catch the last train to London. A few hours later I was in my room at the Westminster Palace Hotel, for it was of course much too late to think of hunting up Madelaine. I must wait until the next day.

I passed a restless night, for I could not rid my mind of a misgiving that had been weighing upon it for several weeks past. This misgiving was none the less oppressive because it was not founded upon what could be called a fact. Facts are by no means always the most persuasive part of experience, and a conviction may be none the less a conviction because it is impossible to furnish a matter of fact reason for it.

I had been away from England four years in all. Most of this time had been passed in New Zealand, as editor and, finally, as proprietor of a newspaper there. I had partly made up my mind to settle there and have Madelaine come out and join me, or perhaps to return and be married to her in London and take her back with me. But when her letter came, informing me that she was "not very well," I formed a sudden determination to sell the paper and return for good and all. It was not so much what she said as a certain depressed tone apparent throughout her letter that impelled me to this step.

The letter had reached me on the last day of July. I made my arrangements promptly, and succeeded in disposing of my newspaper on favorable terms. I then wrote to her that I was coming, and a few weeks afterwards I embarked. The idea of returning home in comparatively prosperous circumstances to marry the woman I had loved so long filled me with happiness, and during the early part of the voyage I was in excellent spirits. Then came the mystery; and from its effects I had suffered ever since.

No doubt the situation, in other respects, did not call for anxiety. Madelaine, like myself, was an orphan, but I believed her to be in good hands. Mrs. Trench, the executrix of the will and the girl's guardian, had a good business head, great force of character, and was in all respects an uncommon woman. She was a widow, and for years had conducted her late husband's business in a masterly manner, paying off one by one the heavy debts which had been contracted, and establishing it upon a paying basis. She was a second cousin of Madelaine's, and the girl and her £20,000 could not have been left in safer or more capable hands. I had gone abroad completely at ease on that score. All the same I was very ill at ease now.

When I looked out from the window of my hotel room that Sunday morning I was confronted by a dense and dark London fog. My watch told me that it was eight in the morning, but it might have been that hour in the evening for all the daylight there was. I dressed and went down-stairs, and by nine o'clock I was in a hansom, on my way to Courtfield Gardens, Earlscourt, where Mrs. Trench and Madelaine lived. The distance was not great, but the fog was so bewildering that we were nearly an hour in reaching the place. At last the cabby drew up in front of the house, and I jumped out and ran up the steps. I was very much excited, but I tried to fight down all dark thoughts, and the anticipation of seeing Madelaine once more sent the blood tingling through my body.

A servant opened the door and stared at me inquiringly. I asked whether Mrs. Trench was at home. The girl replied that no such person lived there. Miss Madelaine, then? The girl shook her head. "It's Mrs. Forbes' family lives here, sir," she said. And she added, in response to my startled inquiries, that they had been in possession not much over a month.

I demanded to see Mr. Forbes, who turned out to be a portly and respectable British merchant; but he could give me little available information. He had only seen Mrs. Trench once; of Madelaine he knew nothing. The negotiations had been conducted through the house agent. I obtained the address of the latter, and returned to my hotel in a very unenviable frame of mind indeed. Being Sunday, I was forced to remain inactive till the next day. I now felt sure that Madelaine was dead. But how did she die? And why had Mrs. Trench, who knew I was coming home, left no trace or clew for me to find her? It had an ugly look.

Next morning the fog still continued, but I was at the house agent's office almost as soon as it opened. Here, too, my investigations were far from reassuring. The agent had never seen Mrs. Trench at all. A gentleman had called on him and transacted the business on Mrs. Trench's behalf. This gentleman had not given his name, but was described to me as a tall, slender personage, with a dark beard and eyeglasses. More he could not tell me.

From the agency I drove to Mrs. Trench's place of business, in Leadenhall Street. I did not expect to find her there, but I could scarcely fail to learn her whereabouts. To my astonishment I found the store in the hands of strangers. Trench & Co. had made an assignment nearly a year before, paying eight shillings on the pound. No one knew where Mrs. Trench was, nor could any one give me the least information about Madelaine.

I was now not only thoroughly alarmed, but also thoroughly aroused. Evidently there was some black secret here. I would fathom it at whatever cost. Who was the black bearded man and what were his relations with Mrs. Trench?

A hundred doubts and questions assailed my mind. The assignment was another ominous feature; for I remembered, with a new shock of apprehension, that in case of Madelaine's dying unmarried, her property would fall within Mrs. Trench's reach; the exercises of a few legal subterfuges would enable her to get possession of it. If there had been a crime, here was a motive. But was Mrs. Trench capable of a crime? Why not? I knew her as a woman of untiring energy and indomitable purpose. She had shown these traits in rehabilitating her husband's business; but, if an evil end instead of a good one were in view, why should not the same qualities find exercise in that direction? I could give no reason why not.

In order to be prepared as far as possible for the worst, I went to the registry of deaths and consulted it for the name of Madelaine Tredwick. It was not there—reckoning from the date of her last letter to me. This was so much to the good. Of course, she might have died elsewhere, or she might have met a fate to which death would be preferable; but, on the other hand, all might not be so bad as I feared. To be able to hope was at least something.

This brought me to Monday evening, and I went back to my hotel and slept heavily till morning, for I needed sleep. When I awoke there was an unwonted light in the room, which faced the east. I looked out, and for the first time since my arrival in London saw the sunshine. The fog had withdrawn its hideous shadow for the present. With that unreasoning sympathy which the weather often arouses in the mind, I felt my own mood brighten. If Madelaine were alive, I would find her yet. But that "if" was terrible.

The first person I saw as I came down the steps of the hotel after breakfast was Robert Heath, my classmate at Oxford, and formerly my intimate friend. He was a barrister by profession and a good fellow down to the soles of his boots. I called to him; he turned, recognized me, and a broad smile of pleasure and surprise illuminated his honest visage. He grasped my hand, asking a score of questions, and welcoming me back to England with word, tone and look. As I talked to him all my old feeling of trust and affection came back to me. This was the friend I needed; not so much for whatever practical help he might afford as for the encouragement and consolation of his presence and sympathy. After we had stood awhile, I asked him which way he was going. He answered that he was bound across Hyde Park and on through Maida Vale to call on a client in Carleton road. "And being a fine day," he added, "I started early and was going to foot it. But if you'll come with me we'll take a cab."

"A walk is just what I need," I replied; "and there's something I want to talk to you about." So off we started, and, as we tramped along, I unfolded to him the whole story of my fears and purposes. He listened attentively and seriously. When I had finished he considered for a while, and then said: "It certainly looks rather fishy. But—"

He never finished the sentence. We had by this time nearly reached the end of Maida Vale, and had turned to the left down Carleton road. The houses in this reigon were detached, each standing in its own inclosure, protected by high brick walls. I saw a cab drive up to one of these houses and a lady in a black dress alight and ring the gate bell. Though I was fifty paces off, I recognized Mrs. Trench immediately. She did not see me, and in another moment the gate was opened, and she disappeared within. "Did you see that?" I exclaimed, grasping my companion's arm. "That is she!"

"Mrs Trench? That's odd! And the house she went into is my client's!"

"Who is he?"

"His name is Glenn—Dr. Glenn; the house is a private lunatic asylum."

"Good God, Bob! May not that be the solution of the mystery? Suppose Madelaine were—" I could not finish the sentence.

"To tell you the truth," replied Heath, "I was thinking of something of the kind when you interrupted me. People are still sometimes disposed of in that manner when circumstances demand it. And, by the way, it was about some question of transferrence of property that I was going to see Glenn. There is something about the affair I didn't quite like the looks of, and I intended, in case he failed to make satisfactory explanations, to refuse to have anything to do with it."

(*Concluded next week.*)

AMERICAN CITIZENSHIP.

DOMESTIC VINDICATION OF THE ABUSED AMERICAN PIE.

A certain mother, who had been seized with the Anglomaniac fever, endeavored to keep house on strict English theories. Certain American dishes were never to come upon her table, and on the list of the banished were pies, "pizen things," as they were by her then considered. This rigorous exclusion of the national dish, which is universally considered one of the corner-stones of the Constitution of the United States, resulted in a little rebellion right in her own family; for her children, as they grew older, realized that they were being deprived of their "inalienable rights," and not wishing to grow up and become deficient and incompetent citizens, simply from a lack of pie, demanded its restoration, so that American pie finally reappeared on that Anglomaniac table, at first by way of compromise, under the name of "tarts." The mistress, realizing that pie neither affected the health nor the social standing of the family, now permitted pies to appear in their native loveliness, and the children rejoiced in genuine, unmitigated American pie, including all the varieties of apple, pumpkin,

mince, berry, etc. Moreover, in explanation of the surrender, the lady declares that her children all have good clear skins, and that a good pie is just as easily digested as any other dessert, and that the fact of its being wholesome or unwholesome depends, as is the case with most food, on the cooking.

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

November.

MEATS.—Beef, mutton, pork, venison.

POULTRY AND GAME.—Chicken, duck, geese, grouse, hare, partridge, pheasant, pigeons, rabbits, turkeys, widgeon, wild ducks, woodcock.

FISH.—Brill, carp, cod, whiting, salmon trout, perch, smelts, oysters.

VEGETABLES.—Artichokes, broccoli, celery, potatoes, turnips, cauliflower, cabbage, carrots.

FRUITS. — Apples, pears, quinces, grapes, nuts.

PRACTICAL RECIPES.

CREAM SOUP.—Take one quart of clear soup and heat it to the boiling point, then add the yolks of two eggs, well beaten, with half a cup of cream, and serve at once without further boiling.

STEWED CHICKEN WITH CREAM.—Boil a chicken until perfectly tender, then remove the meat from the bones and cut it into narrow strips. Put two heaping table-spoonfuls of butter over the fire in a stewpan, and when melted add three even table-spoonfuls of flour, and some pepper, salt, and mace; pour a few spoonfuls of the chicken stock on this, and then add a cup of rich cream. Put the chicken into this sauce, and simmer for a few moments before serving.

EPICUREAN OYSTERS.—Put into a saucepan over the fire three table-spoofuls of butter, one table-spoonful dry mustard, pepper, and salt; when they begin to boil put in about half a pint of oysters, drained out of their liquor; have ready a very hot dish, and as the oysters are done take them out of the butter with a fork and lay them on it, and put some more to fry, and so continue until all are done.

VEGETABLE OMELET. — Boil until quite tender a pound of potatoes and half a pound of carrots, then rub them together through a wire sieve with a wooden spoon; then add a beaten egg yolk, salt and pepper to taste, and a good teaspoonful of butter; rub and beat these ingredients into a thick paste. Butter a baking dish and sprinkle it plentifully with bread crumbs and put in the mixture; sprinkle bread crumbs and bits of butter over the top, and bake for about thirty minutes, or until the crumbs are nicely browned, then turn the omelet out whole onto a platter, and serve very hot.

MOLASSES COOKIES.—One cup of molasses, one large table-spoonful melted butter; one dessert-spoonful of ginger, a little salt, one teaspoonful soda dissolved in half a cupful of cold water; flour enough to roll out. Bake in a steady oven.

ORANGE PRESERVES.—Slice very thin one dozen Messina oranges, and put with them the juice of two lemons; measure them, and add sufficient water to make three and a half quarts, and let it stand overnight. In the morning put it on the fire, cover, and boil until soft, then add five pounds of sugar and boil for about three-quarters of an hour or until the oranges are clear.

GRAHAM PUDDING.—One and a half cupfuls Graham flour, half cupful molasses, one cupful chopped suet, butter or lard; half cupful sweet milk, one egg, one teaspoonful soda, one cupful stoned raisins (other fruit, if desired), one teasponful cloves, one teaspoonful nutmeg, one teaspoonful cinnamon. Steam two hours and a half.

EUROPEAN SOAP.

HOW TOILET SOAPS ARE MADE IN GERMANY.

Owing to the different conditions of the oil market in Europe as compared to America, the raw materials for the soaps made there are somewhat differently regarded in Germany from what they are here. Cocoanut oil and palm kernel oil largely predominate there while wool fat, linseed oil, horse fat, and recovered greases are given special attention in connection with the many problems which confront the German manufacturer in regard to the proper procedure in the many soaps which he makes on a small scale. For it must be understood that there the number of even comparatively large factories is exceedingly small when compared to that of the very small factories that make their boiled soaps in batches of 3,000 to 4,000 lbs. or less, in a kettle heated by an open fire, and with hardly as much as an indistinct recollection of having heard that in some parts of the world soap is crutched by machinery. Besides the difference in the raw material used mostly, and the small scale on which the German manufacturer generally operates, there is also the difference in climate as well as of usage and popular taste, which calls for one kind of soap in in one country and for other kinds elsewhere; so, for instance, boiled-down soaps are used to a much greater extent in Europe than they are here, and again, as owing to their moist climate soaps dry less rapidly than they do here, such kinds are greatly made as would prove almost insoluble in our climate after storing for some time. Then, too, soft soaps are made in Germany in incredible quantities. But, to come to our subject of toilet soaps. It will be seen from the following description by Dr. Bering, a German soap manufacturer, that in the matter of toilet soaps the difference between the countries is less marked, only that they make a much larger proportion of their toilet soaps by the cold process. In a detailed description of the process Dr. Bering writes the following, from which some of our readers can perhaps gain a useful wrinkle or two: "The soaps turned out by our perfumers are made either directly or indirectly by remelting or by milling. In the two last-named processes soda soaps are used which must be free from odor and perfectly neutral, must be easily melted on heating, and, in spite of greater solubility—must yield a more abundant and solid lather than the boiled soaps." [We presume the author meant to say "the ordinary boiled soaps," since the remelted and the milled soaps are most generally boiled soaps.—Ed. *A. S. J.*] In the first-named process the fats are melted at the lowest pos ible temperature, not above 65 deg. R., and one-half of the lye to be used, at sp. gr. 1.33, is run in while stirring steadily; after one half to one hour, according as the mass shows a tendency to become solid, the remaining lye is added, and when the mass appears to be perfectly homogeneous throughout, the color and perfume are stirred in. Now the soap is run into rather strong wooden frames, which are covered inside with linen cloths of close texture, and sufficiently large that the entire block of soap can be covered with them. The square forms consist of side pieces about one and a-half to two feet long and one inch thick, and a bottom of the same thickness. The side pieces are provided with pegs that fit exactly into corresponding holes in the bottom and walls, so that they can be easily put up or taken apart. Iron braces resting in notches on the side pieces give the frames the necessary strength to hold the batch of soap of say one cwt. After framing the soap, the whole is covered with thick cloths in order to keep in the heat which develops. As soon as the soap has become solid the cloths are removed, the soap is allowed to get cold, the side pieces are then taken off and the linen cloth is removed. The soap is now ready for cutting and pressing, care being taken to warm the bars previously if they have become too hard, in order to avoid crackiug. After pressing the cakes are trimmed in order to remove any unevenness on the edges. The fats used are lard, tallow, cocoanut oil, palm oil, and less frequently almond oil. The lard and tallow must be previously purified, and especially the latter has to be freed of its disagreable odor. In running the melted grease into the kettle it is passed through a cloth. The manner of adding the color depends on the nature of the latter, heavy, earthy, or metallic colors, such as umber or vermilion, being added only when the soap has acquired a thick consistency, while dissolved colors may be added while the soap is still thin. Very few colors only can be added before all the lye has been run in and saponification has begun. Aniline colors almost disappear at first under the action of the alkali, but return after cooling. Marbling of the soap is done by stirring up the required color in melted cocoanut oil, running it into a funnel closed at the lower end by a finger, and letting the contents run over the soap as it is run in layers into the frame. When the frame is full a stick is drawn in fancy figures through the soap to distribute the color. Practice is the best teacher, not only in the use of different fats, whether cocoanut oil alone, or with tallow or lard, or with both, is to be employed, but also in deciding whether soda lye alone shall be used or potash lye added to it. Those who work intelligently will soon find which will bring them to the result they desire. The second process, remelting, which is largely practiced in England, consists in finely chipping the tallow soap procured from the soap maker, melting it over a very slow fire while steadily stirring, adding the perfume, mixing well, and framing. If a soap smells too strongly of tallow it may be purified by melting it over a very slow fire or in a water bath, together with one-third its weight of water, preferably rose water, and adding a small quantity of salt to separate the soap again; run it through a sieve, as close as possible, and let cool. Repeat if necessary. In the matter of soap, of course, cheap goods are always wanted and the demand was supplied by incorporating more and more water in the soap. Cocoanut oil soap is especially adapted for this purpose, not only taking up considerable water itself, but communicating the same property to other fats. Such soaps, however, by the evaporation of the water, soon lose their shape and appearance.—*Amer. Soap Jour.*

SLIGHT ERROR.—Customer: "You made a mistake in my prescription the other day. It call for ten grains of opium, and I got a small package containing magnesia." Druggist: "Are you sure about it?" Customer: "Yes; here is a duplicate prescription from the physician. Now the question is, who got the opium?" Druggist: "Dear me, that's so; (to the prescription clerk) "James, who's dead in the neighborhood.

NOT IN THE CONTRACT.—A glass eye may serve as a substitute for the genuine article on some occasions, but there are times when it doesn't fill the bill at all. Here is Mr. Katz, who has brought suit in the New York courts to compel his newly-wedded wife to abide with him. She refuses to do so upon the ground that he has an artificial eye, which fact she had not been made aware of prior to their marriage. The outcome of the suit will be waited with interest by one-eyed husbands.

NO DOCTOR'S BILL.—When a rich man calls in a physician he does not expect that he will be presented with a bill for medical services. In fact, no such thing as a doctor's bill is known in Japan, although nearly all the other modern practices are in vogue there. The doctor never asks for his fee. The strict honesty of the people does not make this necessary. When he is through with a patient, a present is made to him of whatever sum the patient or his friends may deem to be just compensation. The doctor is supposed to smile, take the fee, bow, and thank his patron.

THE COLUMBIAN EXPOSITION.

WORLD'S FAIR NOTES.

Florida, at its recent World's Fair convention, decided to raise $100,000 for its representation at Chicago in 1893.

The Associated Press has applied to the Grounds and Buildings Committee of the Exposition for suitable space, either in the press quarters on the grounds or in a separate building, where its reports can be prepared and dispatched during the Fair. It is certain that the Exposition authorities will provide extensive press and telegraph facilities, but the details are not yet determined.

Between 340 and 350 men are employed in perfecting the landscape features of the Exposition site. It is the intention to make the grounds exceedingly beautiful by walks, drives, lawns, terraces, fountains, shrubbery, and flowers. Several hundred thousand dollars are to be expended for this purpose.

The First Infantry Regiment, National Guard of California, has decided to attend the Exposition in a body, and has inaugurated a plan for providing for the expenses of the trip.

The Palace of Music at the Exposition, it is now expected will stand on the great island formed by the lagoons, and will be surrounded by a magnificent garden of flowers, ten acres or more in extent. This location is desired by Theodore Thomas, Musical Director of the Exposition, but has not yet been finally passed upon by the Board of Directors. The structure will measure 150 by 250 feet, and cost approximately $100,000.

The National Association of Woolen Manufacturers and the American Pottery Association have each decided to make an exhibit at the Exposition such as has never before been seen in this country.

Sir Walker Bullard, who owns the finest collection of native Maori curiosities and paintings in the world, has applied for space in which to display his collection, and intends visiting the Exposition with his family. Maj. John Wilson of Auckland, has submitted a proposition to the Foreign Affairs Committee to bring a colony of Maoris to the Exposition, house them in one of their native-built forts, and let them show their native costumes, home life, and methods of warfare. The proposition is regarded with some favor, as it would add greatly to the value of the general ethnological exhibit of the Exposition.

Theodore Roosevelt, the civil service champion, wants to have an "American Sportsman's Exhibit" made at the Exposition. In explanation of his idea he says: "I want an exhibit of every weapon and utensil used in hunting, fishing, and trapping since the discovery of the country down to the present day. We have the greatest hunting country on earth. The Boone and Crockett Club, of which I am a member, is enthusiastic over an exhibition of the kind, and we want nothing in it but what is American. For instance, I know where the rifles used by Davy Crockett and Daniel Boone can be secured. Nothing could be more interesting than a collection of the kind. The exhibition should embrace the heads of all kinds of American game of the larger sort, and specimens of the smaller game, animals, birds, and fishes; the old wigwams, hunting shocks of pioneer days, all kinds of weapons, and all the conveniences that go to make up a modern hunting camp."

Director George Schneider has received advices from Berlin to the effect that the associated chemical works of the German Empire had agreed to make a full and comprehensive exhibit at the Exposition in 1893. As is well known, the German Empire leads all the world in the matter of the chemical manufactures, and the exhibit thus determined upon cannot fail to be one of the most attractive and instructive at the Exposition.

All Indians who wish to take part in the Indian Congress at the World's Fair are requested to communicate with H. J. Jaxon, who is Chairman of the Committee of Reception and Arrangements for Visiting Indians. Mr. Jaxon's address is No. 170 Washington Street, Chicago.

Exhibitors of the World's Fair can have their empty cases in which their exhibits are transported to the Exposition stored during the Fair for 2 cents per cubic foot; or stored and insured for 2½ cents per cubic foot. The latter rate is less than one-sixth what was charged exhibitors at the Paris Exposition of 1889.

A New York company that manufactures self-winding clocks has offered to furnish free of cost all the time-pieces that will be needed in the buildings during the Fair.

A mammoth labor congress is to be held in Chicago in 1893, under the auspices of the World's Congress Auxiliary of the World's Columbian Exposition. Burns and Tom Mann, who led the great London dock strike to a successful issue in 1889, have promised to be present, as have many other prominent labor leaders. Wm. E. Gladstone and Cardinal Manning have accepted honorary membership, and will submit their views in writing. T. V. Powderly, Carroll D. Wright, and numerous others deeply interested in labor questions, are earnestly supporting the movement.

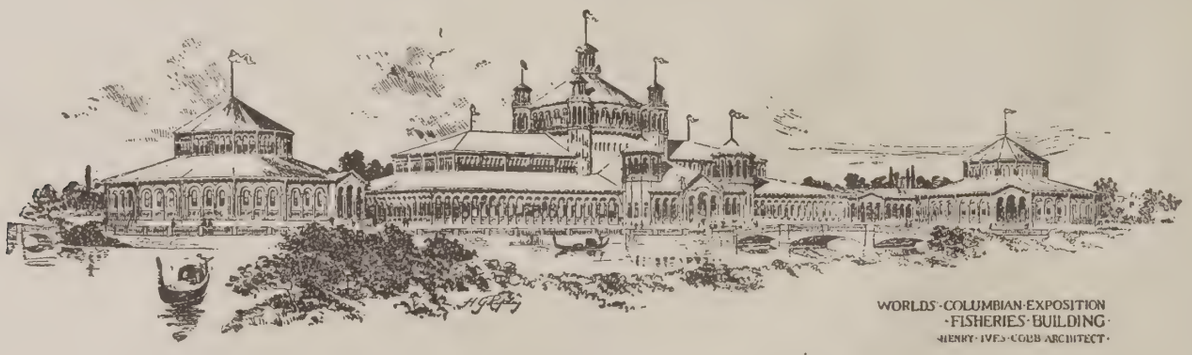


THE HORTICULTURAL BUILDING.

Ivan Malakoff, a St. Petersburg capitalist, wants to reproduce at the Exposition a street scene from Nijni Novgorod, the celebrated place where expositions have been held for 800 years. He agrees to spend $250,000 upon the reproduction.

A company has applied for space to erect a building in the form of an iceberg in which to make a polar exhibit. A group of Esquimaux, with reindeer, furs and all the paraphernalia of inhabitants of the polar regions, will be installed in the building if the concession is granted.

The Ways and Means Committee has granted W. L. Libby & Son Company, of Toledo, Ohio, a concession for the operation of a big cut-glass factory. The Company will invest between $50,000 and $75,000 on its plant, which will be located at 59th Street, in the Midway Plaisance, on a plot of land 150 by 250 feet.



Turkey has appointed as World's Fair Commissioners D. Jemal Effendi, Agricultural Inspector at Broussa, and Pangiri Bey, Sub-Director of the Foreign Press Bureau.

The Exposition Directory has called upon the Comptroller of the City of Chicago to sell $1,000,000 of the $5,000,000 of bonds which the city voted in aid of the Exposition. The proceeds, which it is desired shall be realized within ninety days, is to be applied mainly to paying the enormous expenses of the construction of the buildings.

The magnitude of the building operations now going on at Jackson Park can be surmised from the fact that an average of from thirty-five to forty car loads of construction material arrives daily. The Exposition buildings are rising with wonderful rapidity.

COMPRESSED DRUGS.

A NEW METHOD OF PREPARING MEDICINES FOR THE ARMY AND NAVY.

Army and Navy officers, and particularly those of the medical branches, evince great interest in a contract which was awarded at the War Department for a new system of carrying medical and surgical supplies for an army. Ever since the last Sioux campaign there has been a growing demand for a plan by which supplies needed by the surgeons could be placed in a more compact form than liquid, and carried with greater safety and economy. The result is believed to be as near perfection as possible. In a small light wooden chest 23 inches long, 14½ inches wide, and 17¾ inches high, are sixty square bottles containing as many different kinds of medicine, but in compressed tablet form, none of them being any larger than an ordinary peppermint lozenge. One of these lozenges or tablets contains all the necessary ingredients of a famous liniment, and when dissolved in an ounce of distilled water its healing properties are the same as if it was in liquid shape and in a big glass jar. Some idea may be formed of the perfection to which the art of compression has been brought by the fact that if the contents of this small brass-bound chest were liquefied and in their customery jars and bottles they would occupy nearly one-half of the space of a regular freight car. There are two of these chests to be supplied to each battalion of 200 men. No. 1 is marked with the Geneva Red Cross and inscribed, "Medical Supply Chest," while the only difference in No. 2, so far as outward appearance is concerned, is the inscription "Surgical Supplies." With certain kinds of medicine, like cough mixture, used in quantities, a bottle holding a gill of the compressed tablets is equivalent to a gallon of liquid, and should the bottle break the merits of the tablet are not impaired in the least. Contract was awarded for 200 of these chests, and one of each kind is to be placed under the driver's seat of an ordinary ambulance. or in case of field service, and when pack mules have to be utilized, the chests are suspended on each side of the pannier, their weight with contents being but eighty-five pounds each. On the top of each bottle-stopper is the name of its contents, and fixed securely in the lid of the chest is a list of contents for the information of the surgeon or hospital steward in charge. Surgeon J. C. Merrill, of the Surgeon-General's office, who has been supervising and conducting the experiments, declares that the new system will revolutionize the mode of supplying needed articles for an army, and will be of value as well to the National Guard organizations of the various States. Iowa is already in the field with inquiries on the subject of these chests, and it is quite likely that at the next annual encampment of the troops of the Hawkeye State these necessary medical and surgical adjuncts will be seen in abundance. Whiskey, brandy, alcohol and castor oil are carried in liquid form, these ingredients rendering it impossible to form them into tablets, but cod liver oil is compressed. In making the investigations the English army system of carrying medical supplies was examined, but while lightness was obtained by means of wicker baskets covered with raw hide, it was demonstrated that if the hide became dampened it would twist in all shapes and destroy the bottles which the wicker baskets were filled with. Hence a light wooden chest was determined upon, and a New York firm provided what proved to be the best and most attractive looking model. It was accordingly awarded the contract.

THANKSGIVING TURKEYS.

When Benjamin Franklin proposed to make the turkey the national bird instead of the bald-headed eagle, he was indulging in a little quiet satire at the American habit of overeating at Thanksgiving and the Christmas holidays. The evil was apparent to his sagacious eye even in those poor continental days. It has grown since with every year and is to-day the preponderating vice of our people. The Thanksgiving turkey more than symbolizes the fact—it is a part and portion of it. The average patriot, his wife and children believe that they have not performed their duty to themselves, to society at large, and to the old flag on Thanksgiving and the other national festivals unless they have gorged themselves with what is really the official bird of Uncle Sam, the eagle to the contrary notwithstanding. In this manner the innocent gobbler has become the best friend to the physician and pharmacist, and the worst foe to the health and longevity of the American public. The evil has grown with the years. Overeating, plain and simple, overeating with an excess of drinking, overeating without exercise or physical toil have one and all played havoc with the assimilative system. With a healthy man or woman it produces indigestion, colic, cholera morbus and dyspepsia; another series of physiologic consequences are diseases of the liver and kidneys; a third are those of the skin; a fourth of the heart. The evil does not stop here. When well developed it becomes more or less hereditary, and is transmitted from one generation to another in the form of weak organs, devitalized functions, anemia, loss of appetite, insomnia, sick headaches, nervousness, and even greater disturbances of the organization as a whole. It was on account of these facts that a wise physician once said, "More people are killed by eating too much than by famine or starvation." The problem to the physician is very serious and complicated. In the first place he must cure the peptic evils produced by overeating, and in the second he must cure the morbid tendencies which induce men and women to use inordinate amounts of food. To effect these two objects demands time and patience. The entire system must be rebuilded, cleansed, purified and strengthened. The sufferer is a sick man, and needs long continued care and attention. The best course is to follow nature. The body must be clean without. Daily baths with warm water, and gentle rubbing with the towel and hand all over the body, and especially over the abdomen, are a necessity. The system must be supplied with sunlight and fresh air. Walks, rides or drives, tennis, rowing, swimming, croquet, quoits, cricket, lacrosse and ball are invaluable. One rule should be borne in mind. Don't do too much; do what pleases you, and have as much company as you can get in doing it. The sufferer should keep regular hours, associate with genial companions, attend light amusements and read pleasing literature. In his diet he should use fruits as much as possible. They never do harm, and almost always are productive of good. Above all, he should strengthen his vital organs and thereby increase his vitality by freely using Ayer's Sarsaparilla. It cleanses the interior of the body by stimulating the secretory and excretory functions, and thus eliminating all humors of the organization. It is not a rapid process. No process can undo in a few hours what has been done by years of wrong-living; nevertheless it accomplishes its aims. Ere long the sufferer from digestional ailments finds that Ayer's Sarsaparilla has not only restored his health and strength, but has put his system into better condition than it ever was before in his life.

BUSINESS NOTES.

ARMOUR'S DIGESTIVE FERMENTS.

The intrinsic value and permanence of the commercial forms of the Digestive Ferments, as also their freedom from disagreeable odor and taste, depend most largely upon the use of perfectly fresh raw materials, and their absolute protection against taint or contamination during the process of isolation. The liability of injury to raw materials by the formation of albumo-toxin during the time required for transportation from the place of slaughter to the laboratory, is now well recognized as a danger which must be avoided. The facilities of Armour & Co. are obviously unsurpassed for obtaining fresh materials; their laboratory, which is located within a stone's throw of the killing floor, is probably the largest and most perfectly equipped in the world, and their methods of isolating the several Digestive Ferments are the result of careful expert research. They invite special attention to the points of superiority of their Digestive Ferments, and while they are of finer grade and higher power than most products of this nature, they are lower in price than any other brand worthy of comparison. They manufacture non-hygroscopic powdered pepsin, free from all foreign odor and taste, with a digestive power of 2,500 times its weight; scale pepsin of the same qualities and strength; pepsin tablets; glycerole pepsin tablets of pancreatine, and pepsin phosphate. These goods can be obtained of druggists everywhere. Samples will be sent free to any physician addressing Armour & Co., Chicago.

FOR DYSPEPSIA.

Use Horsford's Acid Phosphate. Dr. Lorenzo Waite, Pittsfield, says: "From its use for a period of about eight weeks, to the exclusion of all other remedies, I attribute the restoration to health of a patient who was emaciated to the last degree, in consequence of nervous prostration and dyspepsia. This patient's stomach was in such an irritable condition that he could not bear either liquid or solid food. An accomplished physician of many years experience, whom I called in consultation pronounced his case an incurable one. At this stage I decided to use Horford's Acid Phosphate, which resulted above mentioned."

HUGE FILTER. - A large filter of 1,250,000 gallons daily capacity was recently tested and accepted by the city authorities of Philadelphia for supplying the new city hall with water. The filter is over 20 feet in diameter, is about 12 feet high, and was tested under a pressure of 125 pounds for forty-eight hours.

ARTIFICIAL AGE.—Oak may be given the appearance of age by sponging with sulphuric acid and water equal parts, or what is preferable, staining with umber in thin shellac varnish. Iron work may be treated with a wash of sulphate of soda and heating over a fire, or by brushing a solution of flour of sulphur in ten parts of turpentine, dissolved by heating over the irons, then holding them over an alcohol lamp; heat until the black polish appears.

RUBBER CEMENT —To fasten glass letters, figures, etc., on glass (show windows) so that, even when submerged in water for several days, they will not become detached, use an Indian rubber cement. The best for this purpose consists of one part India rubber, three parts of mastic and fifty parts chloroform. Let it stand for several days at a low temperature to dissolve the cement. It must be applied very rapidly, as it becomes thick very soon.

ROUGH ON MICROBES.—A German physician, who has been experimenting upon himself, recommends sauer-kraut as the best remedy for nervous dyspepsia. One can hardly imagine how so nauseous and indigestible an article could be beneficial to a disordered stomach under any circumstances, unless it be upon the principle which one bacteriologist has suggested as being available as a method of combating disease; namely, that one set or class of germs may be destroyed or driven away by another set. The symptoms of nervous dyspepsia are well known to be due to the development of microbes in the stomach, and to the poisons formed thereby. It is quite possible that the germs of sauer-kraut are so much more virulentor active in character that they are able to subdue and oust from their pre-empted territory the mischief-making germs which are present in this form of stomach disease.—*Good Health.*

FIBER PIPES.—Steam pipes are now made of ramie fiber, and the material is pressed so closely together by means of hydraulic machinery that it has a tensile strength two and one-half times that of steel.

VAST ENTERPRISE.—When the Thomson Electric Welding Company was organized it purchased from Professor Thomson five patents and five applications. To-day the company has 131 patents and applications, besides several which it has in foreign countries.

RAPID PROGRESS.—Chief Barrett, of the electrical department of the World's Fair, is confronted by what appears a unique predicament. He states that owing to the many and rapid improvements being made in electrical machines most manufacturers are afraid to prepare an exhibit until the last minute. By the time the fair opens, two years hence, the fixtures they now have in hand may be, according to Chief Barrett, the most antiquated of "chestnuts."

CREMATION IN JAPAN.—Cremation is gaining much favor in Japan. In the capital, Tokio, alone, there are six crematoriums, and in 1889, of 34,437 deceased persons, 11,023 were cremated. Cremation has increased since it is prohibited to bury within the city. There are three classes of cremation, prices being respectively 28, 9 and 4s. The crematoriums are the property of companies and excellently arranged. The process takes three hours.—*Insurance Post.*

MUSHROOMS AND POISON.—Edmund Collins has been investigating mushroom raising and eating in the United States, and first of all lays down this law for distinguishing the edible from the poisonous: The table mushroom, called *agaricus campestris*, is usually white on the outer surface, and when newly born has gills or under-radiants of a beautiful salmon pink. After a day or two's exposure these turn a mahogany brown. But the infallible test by which this wholesome mushroom—which has by the way a sweet, nutty fragrance—may be distinguished from the dangerous *agaricus fastibilis* is this: In the good mushroom the under-radiants or gills are not joined to the stem. In the bad mushroom this junction is perfect. The United States consume at least $500,000 worth of mushrooms a year, but do not raise one-tenth as many as they ought.

A Tonic

Horsford's Acid Phosphate.

A most excellant and agreeable tonic and appetizer. It nourishes and invigorates the tired brain and body, imparts renewed energy and vitality, and enlivens the functions.

Dr. EPHRAIM BATEMAN, Cedarville, N. J., sasy:

"I have used it for several years, not only in my practice, but in my own individual case, and consider it under all circumstances one of the best nerve tonics that we possess. For mental exhaustion or overwork it gives renewed strength and vigor to the entire system."

Descriptive pamphlet free.

Rumford Chemical Works, Providence, R. I.

Beware of Substitutes and Imitations.

CAUTION:—Be sure the word "Horsford's" is on the label. All others are spurious. Never sold in bulk.

WATER CURE.—Hot water taken freely half an hour before bedtime is helpful in the case of constipation, and has a most soothing effect upon the stomach.

TALL TOWER.—The marble tower of the Philadelphia city hall, which rises to a height of 337 feet 4½ inches above the pavement of the court-yard, is to be surmounted by a clock story of iron, 67 feet 8 inches, and this by a pyramidal dome of aluminium, 105 feet 7 inches high, the whole capped by a bronze figure of William Penn, 37 feet tall.

GAS ICE.—Mr. S. P. Sticker, an engineer, of Buffalo, N. Y., claims to have discovered a method of making ice by means of illuminating gas, which may be returned to the mains after use without deterioration. By experiments in the works of the Provincial Gas Co., at International Bridge, Ontario, he produced a temperature of 80 deg. below zero by the use of water and gas only, without chemicals.

MAN'S INSIGNIFICANCE.—If it were possible for man to construct a globe 800 feet in diameter, or, say twice the height of St. Paul's Cathedral and to place upon any part of its surface an atom one-four thousand three hundred and eightieths of an inch in diameter and one one-hundred and twentieth of an inch in height, it would correctly denote the proportion man bears to the earth upon which he stands.

POISONOUS TEXTILES.—A gentleman recently died at Warburton, Eng., under the circumstances indicating poising from arsenic contained in a carpet of a bright crimson color. A London analyst has also reported a case in which a lady had purchased from a well known West-end establishment several yards of a light flimsy printed material of the kind now so much employed for curtains and other household decoration. While working at this material, both the lady and her maid began to suffer from symptoms of arsenical poisoning. The substance was found by the analyst to contain very large quantities of arsenic.

NATIVE TIMBERS.—The United States Department of Agriculture, through the Forestry Division, has commenced an elaborate investigation of the physical properties of American timbers as related to their conditions of growth, and the uses to which they are put. These examinations and tests are to be made on all the commercially useful timbers selected from all parts of the country, and on commercial sizes up to the largest beams ever used, and will prove of value to engineers, architects, builders, railroads, lumber manufacturers and dealers, and to the public generally. They will extend over a series of years, but the results will be made public as fast as obtained. The investigations are being made at the Botanical Laboratory of the University of Michigan, at Ann Arbor, and at the St. Louis Test Laboratory, in charge of Prof. J. B. Johnson.

EYESIGHT OF INDIANS.—Dr. L. Webster Fox is of opinion that savage races possess the perception of color to a greater degree than do civilized races. In a lecture lately delivered before the Franklin Institute, Philadelphia, he stated that he had just concluded an examination of 250 Indian children, of whom 100 were boys. Had he selected 100 white boys from various parts of the United States, he would have found at least five of them color blind; among the Indian boys he did not discover a single case of color blindness. Some years ago he examined 250 Indian boys, and found two color blind, a very low percentage when compared with the whites. Among the Indian girls he did not find any. Considering that only two females in every 1,000 among whites are color blind, he does not think it surprising that he did not find any examples among the Indian girls.

MOORISH MIRRORS.—Mr. Steppani, of Berlin, wants to build a Moorish castle on the World's Fair grounds, and proposes to spend $500,000 on it. He exhibited a structure of this kind at Paris, but its cost was much less. The plans have been submitted to the Committee on Ways and Means, and if they are adopted visitors will certainly be dazzled by the Oriental magnificence of Mr. Steppani's palace. The building, it is proposed, shall be 200x200 feet, one story high, and constructed of brick in the Moorish style. Mirrors will make of the interior a place of brilliant and many times multiplied reflections. One will be likely to lose himself in the maze of beveled and prismatic glass, for it is intended that a feature of the castle shall be a labyrinth where the illusions are to be so perfect that on entering one will think he is advancing to an endless series of colonnades.

Every-Day Economy.

One  *rounded* teaspoonful of Cleveland's Superior Baking Powder does better work than a  *heaping* teaspoonful of any other. Cleveland's is wholesome, leavens best and **leavens most.**

EVERY one in need of information on the subject of advertising will do well to obtain a copy of 'Book for Advertisers," 368 pages, price one dollar. Mailed, postage paid, on receipt of price. Contains a careful compilation from the American Newspaper Directory of all the best papers and class journals; gives the circulation rating of every one, and a good deal of information about rates and other matters pertaining to the business of advertising. Address

ROWELL'S ADVERTISING BUREAU,
10 Spruce St., New York.

Fine Table Wines

From our Celebrated Orleans Vineyard.

Arpad Haraszthy & Co

Producers of the

ECLIPSE CHAMPAGNE,

530 Washington St. SAN FRANCISCO.

GENERAL AGENCIES:

NEW YORK: PARK & TILFORD, 917 Broadway.
PHILADELPHIA: F. P. DILLEY & CO., 25 North Tenth St.
CHICAGO: C. JEVNE & CO., 110 Madison St.
ST. PAUL: C. JEVNE & CO., 114 E. Third St.
CINCINNATI: THE JOSEPH R. PEEBLES' SONS CO., 73 West Fourth Street.
DETROIT: G. & R. McMILLAN & CO., 131 Woodward Ave.
HONOLULU, H. I.: HAMILTON JOHNSTON.

PURE PEPSIN

In Powder and Scale.

MANUFACTURED BY

ARMOUR & COMPANY, Chicago.

Guaranteed free from adulteration or make-weights; excellent physical properties and high digestive power.

Under similar conditions, **ARMOUR'S PEPSIN** will exhibit greater activity than any other pepsin now before the profession.

The Manufacturers will be pleased to supply members of the Medical Profession with samples of their pepsin, and with full details regarding digestive strength, if desired.

MAGEE'S EMULSION OF PURE COD LIVER OIL

IN COMBINATION WITH

Extract of Malt, and Compound Syrup of Hypophosphites, (Lime and Soda,)

A RELIABLE REMEDY FOR

PULMONARY DISEASES, COUGHS, COLDS, BRONCHITIS, DYSPEPSIA, SCROFULA AND GENERAL DEBILITY.

Very easy to take. Does not produce Nausea, and is easily assimilated. Thousands of Physicians are prescribing it in their regular practice and many assert that it is

THE BEST EMULSION IN THE MARKET.

Ask your Druggist for it AND TAKE NO OTHER. MAGEE EMULSION CO., Manf'rs, LAWRENCE, MASS. TORONTO, CANADA.

CONFEDERATE MONEY.

Warranted Genuine and in Good Condition.

We are extensive dealers in Confederate Money—rare relics of our late civil war; also Bullets, Cannon Balls, etc. We want agents in every city North to sell these mementoes, and we will pay agents handsomely to sell our goods. We will furnish the money to those desiring at the following retail prices: Shinplasters, 10, 25, 50 and 75 cents each, or the entire set 50 cents. Complete sets, consisting of $100, $50, $20, $10, $5, $2, $1, 50c., $1 per set. $500 bills, $2 50 each. $100 bills, 15 cents, or two for 25 cents. $50 bills, 10 cents, or two for 15 cents. $5 and $20, 5 cents each. 50c., $1 and $2, 25 cents each. Inquirers enclose stamp for reply.

Publishers of SOUTHERN AGENT, Atlanta, Ga.

LITTLE BOYS AND GIRLS

MAKE EASILY $2 A DAY.

Write for particulars. Address

BARKER PUBLISHING COMPANY, Atlanta, Ga.





"*Printers' Ink*," that great authority on advertising, says, "A well-made advertisement placed in a humor." "ous paper is like a well-made hat. It wears well." "Results are often obtained after your advertisement" "has been discontinued for months. A humorous" "paper never dies. It is read and re-read by all the" "members of a family, and visitors find pleasure in" "perusing its columns."

WHY NOT

—OWN AN ILLUSTRATED NEWSPAPER—

TO ADVERTISE YOUR BUSINESS?

Did you know it could be done at moderate cost? Particulars and samples of humorous papers free to any responsible firm. **PICTORIAL WEEKLIES CO.** 28 West 23d Street, New York.

Mr. Gibbs, of the National Cash Register Co., says since publishing their own paper "The Hustler," their business has increased 300 per cent.

INSTRUCTIONS TO SUBSCRIBERS.

The **Names of all Subscribers** are registered as soon as received, and paper is always promptly forwarded.

Postage.—The postage to all parts of the United States and Canada is paid by the publisher.

Remittances of small sums may be made with comparative safety in ordinary letters. Sums of one dollar or more must be sent by registered letter or P. O. money order, otherwise we cannot be responsible for same. Silver must not be sent in a letter.

Postage Stamps will be received for the fractional part of a dollar, and in any amount when it is impossible for patrons to procure bills, but you must send one or two-cent stamps only.

SUBSCRIPTIONS.—The AMERICAN ANALYST will be sent one year to any subscriber for ONE DOLLAR. New subscriptions can begin at any time.

We Stop the Paper at the expiration of the time paid for unless a renewal of subscription is received. Those whose subscriptions have expired must not expect to continue to receive the paper unless they send the money to pay for it.

Change of Address.—Subscribers wishing their addresses changed must invariably give their former as well as new address.

Missing Numbers.—It occasionally happens that numbers of our paper sent to subscribers are lost or stolen in the mails. In case you do not receive any number when due, write us a postal card and we will cheerfully forward a duplicate of the missing number.

Most Important of All.—In every letter that you write us, never fail to give your full address, plainly written—name, post-office, County and State.

Address all letters to

THE ANALYST PUBLISHING CO.,
19 Park Place, New York.

"BILLET"

are

Carefully Selected French Sardines,

Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS.

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,

HOWARD STREET, BOSTON, MASS.

HARTSHORN'S SELF-ACTING SHADE ROLLERS

NOTICE SCRIPT NAME OF Stewart Hartshorn ON LABEL, AND GET THE GENUINE HARTSHORN

The Old Doctor's Book of Secrets.

Tells everything! Over 400 pages, closely printed, with illustrations. Contains medical receipts and prescriptions, and much valuable information all young men should know. Sent securely wrapped in plain wrapper, postage prepaid, to any address for $1.00.

(Send for it. One receipt alone may save you many times its cost.

EUREKA PUB. CO., Box 441, Chicago.

A CHEMIST, 27 years of age, educated in the United States (School of Mines, New York) and Germany, wishes a situation in some chemical industry. Excellent recommendations and certificates. Address,

"CHEMIST," P. O. Box, 3001, New York City.

LADY AGENTS WANTED.

I have a medical specialty for ladies use, which is one of the best selling articles in the country. You can make a good income handling it, and at the same time be doing your sex a great benefit. Write me at once for full information and exclusive territory. If you wish a sample sent enclose 12 cents postage. Dr. H. H. Jackson, 103 State Street, Chicago.

We can save you Fifty Dollars when you Build. See,



A complete set of Plans to build from, simply state about price of dwelling desired. 25 cts. in stamps. Our book "Beautiful Homes," 25 cts. Our monthly book "The National Builder," 25 cts. Address

The National Builder, Adams Exp. Bldg., Chicago, Ill.

GRANT.

SHERMAN.

SHERIDAN.

McCLELLAN.

GEN. GRANT'S MEMOIRS.

Original $7 Edition for 30 Cents.

NO book, excepting the Bible, has ever had such a sale in the United States as General Grant's Memoirs. 650,000 copies have already gone into the homes of the rich, but the subscription price of $7.00 has placed it beyond the reach of people in moderate circumstances. **If 650,000 people have been willing to pay $7.00 for Grant's Memoirs, there must be a couple of million people in the United States who want them, and will jump at the opportunity** to buy them at the low figure here offered.

We will send you General Grant's Memoirs, publisher's original edition, best paper, cloth, green and gold binding, hitherto sold by subscription at $7.00,

FOR 30 CENTS!—FOR 30 CENTS!—ABSOLUTELY ONLY 30 CENTS!

and absolutely a proposition such as has never been made in the history of book publishing. The two splendid volumes of Grant's Memoirs, of which 650,000 copies have been already sold—not a cheap edition, but the best—for 30 cents; provided you send your subscription of $1.00 to the **AMERICAN ANALYST** one year, and also a subscription of $3.00 for the **COSMOPOLITAN MAGAZINE,** the brightest and cheapest of the great illustrated monthlies, itself equal to the best $4.00 magazine.

The **COSMOPOLITAN** is enabled to make this offer because of **the purchase of 600,000 volumes at a price which even publishers would deem impossible, and with the idea of running up its circulation to half a million copies.** By contract with the **COSMOPOLITAN,** and at no profit to us, we are enabled to offer our readers a share in the low price obtained through the largest purchase of books ever made in the history of the world.

If, however, you have Grant's books, our offer will permit you to take instead,

GEN. SHERMAN'S MEMOIRS, 2 Vols., sold by subscription for $5.00
GEN. SHERIDAN'S MEMOIRS, 2 Vols., sold by subscription for 6.00
GEN. McCLELLAN'S MEMOIRS, sold by subscription for . . 3.75

All of these are bound in cloth, green and gold, in uniform style with Grant's Memoirs.

Send us at once $3.00 for year's subscription to the **COSMOPOLITAN,** $1.00 for year's subscription to the **AMERICAN ANALYST,** and 30 cents for a set of Memoirs—$4.30 in all—to which add postage on the particular set of Memoirs selected.

WHY DO WE MAKE THESE GRAND OFFERS?

Simply because we want every intelligent family to keep well informed as to the popular science of this progressive era. We publish the **only popular journal on this subject—THE AMERICAN ANALYST.** Its subscription list is already very large; but we want at least **Fifty Thousand additional subscribers before January 1, 1892.** We know that, if we shall get them, we shall be able to hold most of them as permanent readers of our periodical. So at present sacrifice and at great cost, we have entered into a combination. The **COSMOPOLITAN** is the brightest and cheapest of the great illustrated monthly magazines; it gives annually 1,536 pages by the ablest writers, and over 1,200 illustrations by the ablest artists; and is just as interesting to the young boy or girl as to the oldest grey head. Now, then, we ask you to send us merely $4.30, and, on receipt of same, we will mail them to you regularly for **one year,** and will also send you (making no charge for the books) a set of **GENERAL GRANT'S MEMOIRS,** or either of the other works that you may select. **NO SUCH OFFER AS THIS WAS EVER MADE BEFORE BY ANY PUBLISHER SINCE TIME BEGAN!**

UNLESS OTHERWISE DIRECTED,

we shall invariably ship the books by express, charges to be paid by the receiver. If you wish the volumes forwarded by mail, you must distinctly say so at the time when you send us your address and the Money; and you must also enclose postage to prepay the packages at the following rates: **GRANT'S MEMOIRS,** 96 ozs., 48c.; **SHERMAN'S MEMOIRS,** 92 ozs., 46c.; **SHERIDAN'S MEMOIRS,** 84 ozs., 42c.; **McCLELLAN'S MEMOIRS,** 48 ozs., 24c. The government rate for postage on books is one-half cent per ounce. The **COSMOPOLITAN** and **AMERICAN ANALYST** are sent to subscribers free of postage.

SEND ALL ORDERS ADDRESSED

THE ANALYST PUBLISHING CO.,

19 Park Place, New York.

TABASCO PEPPER SAUCE,

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced by connoisseurs to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY'S SON,

NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

NATRONA BI-CARBONATE OF SODA.

ABSOLUTELY PURE.

The nature of the raw material from which NATRONA BI-CARBONATE OF SODA is made—viz., kryolith, a mineral containing *pure sodium*—insures a purity and uniformity of product which cannot be obtained from any other known material. In making BI-CARB. SODA from any other raw material, the use of sulphuric acid is a necessity, but none is used in any part of the process of making NATRONA BI-CARB.; hence its entire freedom from the slightest trace of arsenic, which is always present in ordinary soda. Its absolute purity and entire freedom from all traces of *sulphate of soda*, common salt and other impurities, render NATRONA BI-CARB. NEARLY TASTELESS, and being bolted through the finest bolting-cloth, insures the finest stage of division.

To these indisputable facts the attention of CONSUMERS of soda is specially called. They are IMPORTANT, and should influence both those who use and those who sell soda, to buy and sell NONE BUT THE BEST.

The NATRONA BI-CARB. Soda is kept in stock by almost every wholesale druggist and grocer throughout the United States, of whom it may be ordered.

Natrona Bi-Carb. Soda is unequaled by any other brand of English or American Manufacture.

PENNA. SALT MANUFACTURING CO.,

NATRONA CHEMICAL WORKS. PHILADELPHIA, PA.

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

ARROWHEAD HOT SPRINGS,

CALIFORNIA.

I MOST respectfully invite physicians of the East to write to me for information concerning this famous Southern California resort. The hot mineral water mud baths, and climate are unequalled in America. Diseases of the throat, lungs, liver, stomach and kidneys, nervous and skin troubles and rheumatism, are the ailments successfully treated. The hotel contains 125 rooms, is first-class, and lighted throughout with incandescent lights. Elevation 2,000 feet. Address,

H. C. ROYER, M. D.,
Arrowhead Springs, San Bernardino Co., California.

A COLLEGE EDUCATION FREE!

In one of the oldest, most prominent Colleges in the country, **ABSOLUTELY FREE.** A chance of a lifetime. Do you want it? You do not need to invest a dollar. Write for particulars to one of the brightest and most original illustrated monthlies in America. Address,

BUSINESS WORLD, DETROIT, MICH.

GOITRE, or THICK NECK.

I have a positive, speedy, cleanly, harmless and almost inexpensive cure. Come or write to me at 28 Arlington Court, CLEVELAND, Ohio. It is no iodine smear. Cure made permanent.

Dr. J. CASKEY.



RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,
184 Greenwich St., N. Y

AMERICAN ANALYST CLUB RATES.

WE have made arrangements by which we can furnish to our readers any of the periodicals named below at a club rate, with the AMERICAN ANALYST, at a considerable saving. Should any periodical not mentioned be desired, or several of the journals, drop us a postal card and we will give you a rate promptly. For sample copies address the publishers. Terms strictly cash, in advance.

	Publishers' Price.	Our Price, including AMERICAN ANALYST. One Year.
Arthur's Home Magazine	$1.50	$2.35
Babyhood	2.00	2.50
Century Magazine	4.00	4.50
Christian Herald, N. Y.	1.50	2.00
Christian Union, N. Y.	3.00	3.50
Cosmopolitan Magazine (See our Premium Offer.)	3.00	3.25
Cottage Hearth	1.50	2.00
Current Literature	3.00	3.50
Demorest's Magazine	2.00	2.50
Family Story Paper	3.00	3.25
Farm and Fireside	.50	1.40
Fireside Companion	3.00	3.50
Forum	5.00	5.25
Frank Leslie's Illustrated Newspaper	4.00	4.50
" " Popular Monthly	3.00	3.50
Garden and Forest	4.00	4.25
Godey's Ladies' Book	2.00	2.50
Golden Days	3.00	3.50
Good Housekeeping	2.40	3.00
Harper's Bazaar	$4.00	$4.50
" Young People	2.00	2.50
" Weekly	4.00	4.25
" Magazine	4.00	4.25
Home Magazine (Mrs. Logan's)	.50	1.25
Judge	5.00	5.00
Ladies' Home Journal	1.00	1.75
Ledger, New York	2.00	2.50
Life	5.00	5.50
Lippincott's Magazine	3.00	3.25
Magazine of American History	5.00	5.00
New York Weekly	3.00	3.50
Our Day, Boston	2.50	3.25
Outing	3.00	3.50
Peterson's Magazine	2.00	2.50
Popular Science Monthly	5.00	5.25
Puck	5.00	5.00
Review of Reviews	2.00	2.75
Scientific American	3.00	3.50
Scribner's Magazine	3.00	3.25
Youth's Companion	1 85	2.50

ADDRESS THE ANALYST PUBLISHING CO., 19 Park Place, New York.

GOLD MEDAL, PARIS, 1878.

W. BAKER & Co.'s Breakfast Cocoa



from which the excess of oil has been removed,

Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

IF you wish to advertise anything anywhere at any time write to GEO. P. ROWELL & CO., No. 10 Spruce St., New York.

SWIFT'S

CHOICE

Chicago Dressed Beef

AND

MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,

UNION STOCK YARDS,

CHICAGO, ILLS.

THE ORIGINAL AND GENUINE (WORCESTERSHIRE SAUCE).



LEA & PERRINS' SAUCE

In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—

Lea & Perrins

Beware of Imitations; see that you get Lea & Perrins'

For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS, NEW YORK.

GLENN'S SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original and Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,

C. N. CRITTENTON,

115 FULTON STREET,

NEW YORK.

The Family Herald,

ISSUED EVERY MONTH,

A CLEAN AND INTERESTING STORY PAPER,

FOR OLD AND YOUNG.

Single Copies, 5c. Twelve Months, 50c.

ADVERTISING RATES.

One page—4 Columns—48 inches	$40 00
Half page—2 Columns—24 inches	25 00
One column—12 inches	15 00
Half column—6 inches	9 00
One quarter column—3 inches	5 00
One eighth column—1½ inches	3 00

THE FAMILY HERALD,

124-132 CANAL STREET, CINCINNATI, OHIO.

The Standard of Excellence.

KINGSFORD'S

OSWEGO

Pure and Silver Gloss



STARCH

KINGSFORD'S

OSWEGO CORN STARCH

FOR

Puddings, Custards, Blanc-Mange, Etc.

THE PERFECTION OF QUALITY.

WILL PLEASE YOU EVERY TIME.

Always ask your Grocer for these goods.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 48. NEW YORK, THURSDAY, NOVEMBER 26, 1891. WHOLE No. 248

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - $1.00 per year.
Single Copies, - - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.

Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.

Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,
H. LASSING, M. D., T. P. McELRATH, *Editors.*
No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

Absinthe 570
Beneficial Foods 570
Breathing Plants 566
Bright Stories.
A Mystery of the Mind—*Concluded* 568
Chronometers 568
Corks 570
Domestic Dietetics 569
Editorials 565
Adulteration Scares; Smokeless Powder; Government Meat Inspection.
Russian Cookery 566
Table Arrangement 569

ADULTERATION SCARES.

There are few subjects more easily treated by a skilful writer, who desires to scare up a sensation, than the adulteration of food. It is unfortunately true that there are dishonest men engaged in the food traffic, as there are in every other kind of business known to civilization, and it is also true that a dishonest man, especially if he be driven by competition, will sell dishonest goods. It therefore happens that substances are sold to the public, sometimes, as food, which are either not food at all, or inferior in quality to those which they are represented to be. This is an evil, to expose which is distinctly within the province of the public press. No greater service can be rendered, at least of a secular character, than to put the reader on guard against frauds of this character. No small part of the success of the AMERICAN ANALYST is due to the fact that we have performed services of this character fearlessly, constantly, and with some measure of skill. It is one thing, however, to expose an evil, and entirely a different thing to describe it in such a way as to destroy public confidence. This latter is the error into which sensational writers are almost certain to fall. The reader of one of their articles must necessarily lose confidence, either in the purveyor or in the writer of the article, and it is fortunate, for everybody but the writer, that the public generally may be credited with enough common sense to distrust the writer rather than the great body of reputable dealers. The so-called "Exposure of the tricks of trade," is tolerably certain to be so sweeping and general as to be unworthy of respect, and the general reader recognizes this fact. A conspicuous example of this kind of journalism was the recent publication of a column article in the New York *Sun*, on "Adulteration of Coffee." It begins with the statement that "Pure coffee is expensive, and therefore there are immense quantities of stuff sold as pure coffee which are in reality compounds of various substances which cost less." Then, after specifying "chicory, acorns, mangel-wurzel, peas, beans and flour" as some of these substances, the writer says, "The estimate has been made that the people of the United States who buy spurious coffee under the name of pure Mocha, Java, or Rio are cheated annually to the extent of about $18,000,000." Now it may be true that this estimate has been made. Any other absurd estimate may be made at any time, by anybody, with perfect ease. The question remains whether it is worth while to waste printer's ink on the publication of it. Other sample statements in the article referred to are these: "The general public without expert knowledge is utterly unable to distinguish the counterfeit." "The purchaser, therefore, has absolutely no protection short of chemical or microscopical analysis." "Very few persons will take the trouble to protect themselves from such imposition." "There is a process * * * so as to produce an article that will deceive some experts." The only safeguard the writer of this article suggests (although he does admit that some dealers sell honest goods,) is to buy green coffee, roast it yourself, and grind it with religious exclusion of any adulterants. Evidently the whole tendency of such an article is mischievous, and it does gross injustice to a most reputable class of business men. Nobody of ordinary intelligence doubts that coffee is sometimes adulterated. Nobody questions the notorious fact that what is sold under the trade name of coffee at less than the market price of pure coffee, is a mixture. The inference, however, that people are cheated to any appreciable extent, is unquestionably false. Not one grocer in a hundred sells these mixtures under the claim that he is selling pure coffee. The customer, unless phenomenally ignorant, knows that when he is buying "coffee" for 20 cents a pound he is not getting coffee, and he is therefore not cheated. If he really wants pure coffee, and will tell his grocer so, he will not be cheated once in five hundred times. As was said, it is the mission of the AMERICAN ANALYST to expose the tricks of dishonest dealers. This we do without fear or favor, but the rehearsal of well-known facts coupled with the inference that the great body of dealers in a standard article are guilty of deliberate swindling, is work that is unworthy of any first-class periodical.

SMOKELESS POWDER.

The modifications in the art and practice of warfare that may be expected to result from the use of smokeless powder are as yet purely a matter of conjecture, and most of the discussions of the subject that have been published have been wholly imaginary. For example it has been said that men would be struck down by adversaries whose position was unseen, and whose weapons noiselessly smote with a death wound. A little reflection might have shown those who accepted those blood-curdling statements that an explosion without noise was impossible, and that, therefore, silent powder had not, and never could be, invented. Absolutely smokeless, too, the new powder is not, but it is invisible at very short distances, and is quickly dissipated. A complete revolution in the art of war will not be effected, but, nevertheless, some modifications will be caused by its introduction. A writer in the London *United Service Magazine*, describing the observations made by him at some recent military manœuvres in France, gives what appears to us the first intelligent account of the effect in large operations of smokeless powder that has been published. He states that the new powder was not adopted by the French because of its smokelessness, but simply on account of its superior ballistic properties. The smokelessness is, therefore, at most a secondary consideration. It is not absolute, but for a dense cloud which hangs is substituted a light filmy vapor, rapidly dissipated. If a single man fires in an average state of the atmosphere, the smoke of the discharge could not be seen at forty yards; or in the case of a volley by twenty-four men, at eighty yards. As to the probable effect of smokeless powder in war, fortress guns will still be easily localized with a field-glass, but if the attacking batteries be constructed at long range behind low parapets, the enemy will be at first puzzled to localize them. At all times, too, field artillery, opening suddenly at various places and distances, would, with the aid of smokeless powder, be more difficult to reply to effectively than formerly. In casemates smokeless powder would be very valuable. In open country, the defenders of a position, if they obtain cover behind a hedge, in a wood, or in trenches, whose existence is not disclosed, will be invisible at any distance, say, exceeding three hundred yards; hence they can fire at the enemy's distant artillery or advancing infantry without fear of a return until some circumstance reveals their whereabouts. Finally the writer whose paper we are summarizing expresses the belief that artillery will no longer commence the action as heretofore; the defenders' artillery will evidently find their account in keeping silent and concealed until the et-

READ PAGE 573.

emy arrive within close range. The machine guns will follow the example of the artillery until the attackers' guns have been masked by their own infantry. The preliminary artillery duel will be a thing of the past, and the power of artillery is, if not killed, at all events much weakened by the adoption of smokeless powder. Ambushes, especially against cavalry, will be much more effective than formerly, and the danger of attacking the enemy in position will be increased enormously. The experience of actual war will probably bring to light other effects of smokeless powder.

GOVERNMENT MEAT INSPECTION.

The Meat Inspection Act of the last Congress is likely to obtain a considerable extension during the coming session of Congress. Even if it is not extended to cover meats of domestic consumption, a large increase in the appropriation will be necessary to keep pace with the demands for inspection of goods for export. The amount was raised from $350,000 in the fiscal year ending June 30, 1891, to $500 000 for the year which ends next June. The amount asked for this year for the whole bureau of animal industry is one million dollars. It is expected that as the purposes of the Meat Inspection Act come to be understood, there will be a strong demand that the system of Government Inspection be applied to meats for domestic consumption as well as to those which are to go abroad. Such a demand will put the Government to considerable expense, but Secretary Rusk estimates that it will not exceed five cents per animal, including the microscopic examination. If the law is amended it will probably be in the direction proposed in Senator Paddock's pure food bill last year, with which the readers of the AMERICAN ANALYST are familiar, to extend its operations to meats which are the subjects of Inter-State Commerce. Actual interference with products which are the subjects of local traffic would be beyond the power of the Federal Government, but the requirement that meat should be inspected which is the subject of Inter-State Commerce would practically accomplish all that is sought. The packing houses could hardly afford to distinguish between the meat they prepared for export to other States and that for consumption in their own States. Even if they tried it, the people would hardly be content to have meat which had not been inspected put off on them when all that went to other States bore the Government stamp of purity. The law contemplates a wide extension of Federal activity, but it is likely to be supported by a great many people who care more for the quality of their food than they do for political doctrines.

BREATHING PLANTS.

HOW VEGETATION IS SUSTAINED BY THE ATMOSPHERE.

Toward the close of the last century, the learned Dutchman, Ingenhouss, discovered by experiments that plants inhaled carbonic acid and exhaled oxygen. The chemical nature of these gases was not then known, and the process was described as the breathing of plants; but when the character of the gases was discovered, it was seen that this vegetable process was the very opposite of breathing. It is, in fact, as is now recognized, a process of assimilation. Of the solid substance of plants approximately one-half is composed of carbonic acid, and this is derived wholly from the atmosphere. The atmosphere is composed of *circa* 21 per cent. oxygen and 79 per cent. nitrogen, and contains about 0.04 per cent. carbonic acid, which is taken up by the leaves of plants The supply is maintained by man and animals which exhale carbonic acid continuously; the earth, moreover, contains many other sources of carbonic acid. The leaves of plants take up carbonic acid by means of numerous pores, or "stomata," as they are called, on their upper surfaces, which admit the air into the intercellular interstices where it is taken up by the cells, and decomposed. The principal agents in the laboratory of the cell which undertake this work are the small green granules known as chlorophyll granules, which decompose the carbonic acid, eliminating the oxygen and retaining the carbon which latter again enters into combination with the sap taken up by the roots, forming starch. This process of starch formation occurs only during daylight. At night the starch is converted into other products which are passed further into the tree for the formation of cellular substance or for a reserve, as for example, in the tubers of the potato, or as sugar in beets. The importance of the green coloring matter in plants is thus rendered intelligible. It takes up and assimilates a chief element of plant substance. The leaves are the prime workshops in which plant substance is elaborated, and, *cætera paribus*, the energy of production of plant substance, is proportioned to their area. With this digression let us now return to the breathing of plants, by which must be understood the inhalation of oxygen and exhalation of carbonic acid, as in animals. That such a process is in operation in plants has been known for the past half century, but exhaustive investigations into the subject were begun only in the sixties. It was a common saying, that plants exhaled oxygen by day and carbonic acid by night, but as has been shown, the former was part of the process of assimilation. But the night process is a real process; oxygen is taken in and carbonic acid is eliminated. As a matter of fact, this breathing process is continuous, night and day, only during the day it is concealed by the process of assimilation. Everything that lives breathes. The process of breathing by day is best observed in plants in which the process of assimilation is wholly or partially arrested, as in etiolated plants grown in a cellar. Breathing is a process of oxydation or slow combustion, and as such is necessarily attended with the development of heat. It is well known that considerable heat is generated in rooms in which malt is in course of preparation. This is a consequence of respiration. The more energetic the breathing, or, what is the same thing, the more rapid the combustion, the greater is the degree of warmth generated. And as breathing and life are inseparable, so respiration in plants, as in animals, is most vigorous where life is most intense. When plants are budding vigorously in early summer, their temperature is frequently many degrees above that of the surrounding atmosphere, as may be demonstrated with a thermometer, It is evident that respiration is a process precisely the reverse of assimilation. The latter is a process of formation of plant substance, the former a process of combustion, in which plant substance is necessarily used up. Seedlings in which chlorophyll is not yet formed, being incapable of assimilation, respire at the expense of their own solid substance. If they increase in weight and volume, it is simply because of the water which they take up. The process of combustion or breathing, is maintained at the expense of the organized substance of the plant. Its carbon and hydrogen, attacked by oxygen, undergo combustion, forming carbonic acid and water, which are then given off. Here the question arises. Is the breathing of plants a simple process of oxydation set in action by the oxygen of the atmosphere, or is it a mere secondary product of a process of decomposition and recomposition going on in the plant substance? This question can now be answered decidedly. There is in the living protoplasm of plant cells, a continuous process of decomposition, not due to the action of atmospheric oxygen; the albumen divides into nitrogenous and non-nitrogenous substances, and the latter undergo combustion and consequent elimination. The correctness of this view is demonstrated by the fact that plants from which atmospheric oxygen is excluded continue to make carbonic acid. Decomposition of albumen takes place also under the same condition, as I have demonstrated by careful experiment. This breathing of plants is a complicated process; but we may conclude with Pflüger, that in living protoplasm the atoms are never at rest, and that their combustion provides the force necessary to maintain them in motion. Dead plants give out no carbonic acid except in the process of decomposition. In living plants the energy of respiration and consequent volume of carbonic acid exhaled, increase with the temperature. This is a matter of economic as well as of scientific interest. Potatoes and grain are not dead but living substances, and the cooler the temperature in which they are stored the less the waste to which they are subjected.—*Die Natur.*

RUSSIAN COOKERY.

SOME CHARACTERISTIC THOUGH UNPRONOUNCEABLE RUSSIAN RECIPES.

In speaking of the Russian cook as a wholly civilized being we, perhaps, pay him a compliment. The nation which looks on unmoved at a Jew baiting is capable of ruthless acts in the kitchen, and some of the following recipes may, we admit, shock, the conventionality of the unenlightened, but even in recipes that appear in the reading most unsavory and eccentric, there is often some redeeming quality, and sometimes a pleasing and original savoriness. In almost every case we believe it is better to eat these Russian dishes then to pronounce their names. Russia, it will be seen by what we cull from her kitchen *repertoire*, is a nation which lives on soups chiefly, but they are not the thin *consommes* affected by Western Europe, but rather of the quality of those porridges, those "messes of pottage" that are meat and drink in one. The tea urn (*Samovar*) hisses all day long in Russian homes, and Russian cookery has been described by the critical foreigner as a cruel tyranny tempered by tea. A French cynic goes so far as to say of Russian civilization that it is nothing but *Samovar et Repentir*; but whether the repentance follows upon too much or too bad tea, or too much or too bad cookery, we leave to the reader of these Russian recipes to discover for himself.

RUSSIAN DISHES.

LITTLE RUSSIAN BORSHTSH (BEETROOT SOUP.)—Before making *Borshtsh*, it is necessary to have a supply of *quass*, which is obtained from beetroots in the following way: Scrape a number of beetroots, and put them into an earthenware vessel; cover them with lukewarm water that has already been boiled, and keep the vessel in a warm place for five or six days, when the *quass* will be ready. Pour it off into a jar or bottle to be used when needed. For the *Borshtsh* take as much lean juicy beef as is necessary to make good, strong soup. Cut various kinds of vegetables, such as turnips, carrots, celery, and beetroots, into long, thin slices, strew a little sugar over them, and as soon as the juice begins to appear, pour them all into the boiling soup, adding a dried mushroom and an onion cut in small pieces. The soup must be continually skimmed. When it has boiled sufficiently, pour the *quass* into the soup, regulating the quantity by taste. Then let the soup boil up once, and serve with slices of the boiled meat and of ham. Should the color of the soup be pale, improve it by grating a raw beetroot into a strainer, and then strain the soup through it into the tureen. Sour cream is always served with the *Borshtsh*, and each person pours as much of it into his soup as he desires.

RUSSIAN SCHTSCHEE OR TSTCHI (CABBAGE SOUP).—*Schtschee* is the ordinary soup of the Russian people, and answers to the *Pot-au-feu* of the French. There are two kinds, the one made with *Sauer Kraut*, or sour cabbage, the other with fresh cabbage. For the former, slice finely two large white onions and put them in a saucepan with four ounces of butter and

four ounces of bacon cut in dice; fry a light brown and add a white cabbage, washed, drained, and finally shred; stir all well together and fry a little longer, till the moisture is nearly evaporated. Then sprinkle in the saucepan two ounces of flour, mixing it well with the vegetables and bacon; add three quarts of slightly salted beef broth, and boil for half-an-hour; then put in twelve ounces of small smoked sausages and cook them slowly for half-an-hour longer. Skim off the fat, take out the sausages, cut them in slices, put them again into the soup, and pour the whole into a tureen; add some chopped fennel and parsley and serve.

OOKHA (FISH SOUP).—Cut up in small pieces various kinds of vegetables—parsnips, turnips, carrots, celery, parsley, etc.—and two large onions, and boil them till they become tender. Then put in the fish of which the soup is to be made. The best fish for the purpose are sturgeon, perch, carp, eel-pouts, chub, and even pike make excellent *Ookha*. In Russia the *Sigg* is used, a fish found almost exclusively in Russia and Finland. If it is intended to serve the fish separately, it need only be boiled long enough to cook it thoroughly; but when eel-pouts and small fish are used, it is customary to boil them till the soup acquires the consistency of a jelly. The fish are then taken out, the soup strained and thickened, if necessary, with a little flour and butter; in any case thin slices of potato are put in. Sometimes the *Ookha* is not strained, especially when the fish of which it is made are small.

RASZOLNIK (PICKLE SOUP).—This is one of the best of Russian soups; it is usually a favorite, even with the strangers who visit the country. Take soup that is not very strong, and pour into it the liquor used in pickling cucumbers, regulating the quantity by taste. Cut up two or three pickled cucumbers into small pieces and put in the soup; boil the whole thoroughly, and flavor it with sour cream thickened with flour.

KHOLODNIK (COLD SOUP).—This soup is made only during the heat of summer, and somewhat resembles the famous *Gazpacho*, the "vegetable soup or floating salad" so dear to the Spanish peasant. *Kholodnik* is made as follows: Take a handful of fennel, salt, and the green tops of young beetroots, mince them finely, pour water over them, and let them boil. Make a decoction of sorrel, put in the boiled green top of a young beetroot, and some finely minced fennel, add a little of the water in which the vegetables were boiled, and stir all together. Then pour in three tumblerfuls more of the water, and a tumblerful of good sour cream, mix well, and put the whole on ice or in a refrigerator. Meanwhile, put into a tureen hard boiled eggs, each cut into four pieces. Remove the shells from about thirty crayfish and put them, together with their heads and claws, into the tureen; add some long thin strips of cold veal, and shortly before dinner put in two pieces of ice; sometimes asparagus is added. Then pour into the tureen the soup that has been cooling in the refrigerator, and serve. The *Kholodnik* should be quite as cold as an ice cream.

PILMNEN (MEAT DUMPLINGS).—This is a Siberian dish much esteemed in St. Petersburg, Moscow, and Northern Russia. *Pilmen* are pieces of dough filled with meat and boiled. The paste is made of about one pound flour, a very little water, one egg, and a pinch of salt. Knead it thoroughly and roll it out thin. The stuffing is prepared as follows:—Take one pound of fat, juicy steak, and mince it as fine as possible; add chopped onion with pepper and salt and a little good gravy, which must be quite hot. Mix all well together and put it in a cool place till it becomes quite cold. Then cut round pieces out of the paste, the size of a tumbler round, and place in the centre of each a large teaspoonful of the prepared meat. Fold the paste over it, take care to well cement the edges so that the gravy shall not escape; then boil in boiling soup or water. When the *Pilmen* float, take them out and put them into a deep dish, into which pour a little soup. Serve them with melted butter, pepper and vinegar.

RUSSIAN SOUP DUMPLINGS.—Take two cupfuls of flour and mix with a little salt, yeast, and melted butter, and dilute the whole with a little warm water to the consistency of light bread dough. Knead it well and place the basin near the fire to let the dough rise. When the dough is quite light, roll it out, not too thin, and put in it a layer of finely-minced meat, carrots, or white cabbage, slightly seasoned with salt and pepper. Fold the dough over, pressing the edges well together, and boil it in clarified dripping. If the vegetables are used in preference to the meat, hard-boiled eggs, finely chopped, must be added.

PASTE FOR THE PIROGG OR PASTY.—Take three tumblerfuls of flour, mix with it one tumblerful of tepid milk, and one and one-half ounces yeast moistened with milk. Set the dough to rise, and when it has risen take the yolks and whites of six eggs, beat them up with two tablespoonfuls of butter, add three more tumblerfuls of flour, and knead the whole thoroughly until the dough comes perfectly away from the basin in which it is made. Let it rise again, and then spread it on a pasteboard, and roll it lightly; transfer it then to a well-buttered baking-tin, and roll it out on it till it is as thin as possible. Then lay on it the filling, composed of meat, fish, or cabbage, finely-minced and seasoned, cover it over with paste, cement the edges as neatly and firmly as possible with white of egg, brush the whole *Pirogg* over with white of egg, and place it in the oven to bake thoroughly.

KOOLIBIAKA (FISH PASTY).—Make a round of good puff paste the size of a large plate; on half of this put a layer of boiled rice which has had two ounces of butter mixed with it and is seasoned with pepper and salt; on the rice put a thick layer of boiled fish; carefully taking out all the bones first. On the fish place hard boiled eggs chopped small, sprinkle a little pepper and salt over these, fold the other half of the paste over this, pressing the edges well together. Brush over the top with some beaten egg and strew bread-crumbs over it, then bake it till it is a good brown color. *Koolibiaka* is favorite luncheon dish, and may be made of raw, salted, or smoked fish as preferred.

MEAT PIROGG (PASTY).—Cut up into small pieces 2 lbs. of stewed beef or game. Put a large piece of butter into the stewpan, add a minced onion and the meat, salt, pepper, a few teaspoonfuls of soup, and leave the whole to stew a little. When it is cool again add the whites and yokes of three eggs, and put the whole on the paste which should be rolled out ready to receive it. Then take half-a-dozen hard-boiled eggs, cut them in small pieces, and place them on the meat. Cover the *Pirogg*, brush it over with white of egg and bake.

VARAINIKEE (CURD DUMPLINGS).—This is a favourite dish in the North, Centre, and East of Russia, and in the *cuisine* of the middle classes sometimes does duty as roast meat. It is made as follows: Make paste as for a *Pirogg*, using butter and eggs, and and roll it out on the slab or pasteboard. Take some cheese-curds and roll them up into a ball—about the size of a walnut—with some butter and yoke of a hard-boiled egg. Cut out with a paste cutter or tumbler, pieces of dough like small cakes. Into these put the balls of curd, folding the paste well over so that the curds shall not escape; it is better to cement the edges with white of egg and press them closely together. Boil them in boiling water till they float on the surface of the water, then take them out, put them on a hot dish, and pour melted butter over them. Serve them with sour cream, of which each person takes as much as pleases his taste.

PIROSHKEE (PASTY WITH CHERRIES).—This dish is as great a favorite in the South of Russia as the *Varainikee* in the North. The paste is not as rich as that used in making other kindred dishes, though it is made with eggs like that for the *Varainikee*. Stone about 1 lb. of cherries, scald them well and strew them with flour and powdered sugar; roll out the paste very thin and cut it into rounds, as for *Varainikee*, then put some of the cherries on each round and fold the paste over them, cementing the sides well with white of egg and presssing them together, so that the juice of the cherries shall not escape. Plunge the *Piroshkees* into a saucepan of boiling water, leaving them there until they float on the surface; then take them out, put them on a hot dish, and serve with sour cream and powdered sugar.

VATROOSHKEE (CHEESE CAKES).—Take some sour paste, roll it out thin, and cut it into round pieces the size of a penny bun. Put on these a thick layer of cheese curds prepared as follows:—To three-quarters of a pound of cheese curds, which have been previously well-pressed, add the yolks of four eggs, two tablespoonfuls of sour cream, and one tablespoonful of sugar, and pound them up together. Having put on each round of paste some of this mixture, cover it with more paste, cementing the edges firmly together, and put them into the oven for about half an hour, when the *Vatrooshkee* will be ready.

BLINI (RUSSIAN PANCAKES).—Take equal portions of flour, and buckwheat flour, or oatmeal, and mix them into a light paste with yeast and lukewarm milk and water. Put the paste in a warm place to rise, and when it has risen add to it two or three beaten eggs; mix the whole together thoroughly well and let it rise again. The paste must not be very stiff. Make it into pancakes about half an inch thick and fry them. They are served with butter and caviare, and are universally eaten during Lent.

SMETANIK (RASPBERRY PUDDING)—Put a pound of fresh or bottled raspberries into a small pie dish and let them stand in the oven till they are quite hot, when they must be taken out. Beat up a teacupful of good, thick, sour cream with two eggs, one tablespoonful of flour and one spoonful of white moist sugar. When this is all well beaten together, pour it over the raspberries and bake the pudding in a very slow oven till it is firm. It should be of a light brown color.

KISSEL.—Boil together 1 pint of Russian cranberry juice and 1 pint of water; mix two tablespoonfuls of potato flour in a little water, and when it is quite smooth, pour the boiling cranberry juice upon it. Mix it well and boil it a little more. This is eaten with cream and sugar.

PANES AND PUTTY.—The work of replacing a broken pane of glass may be greatly simplified by running a hot iron around the old putty, which loosens it, when it may be easily scraped off, and the broken pane removed.

GERMAN CONSERVATISM.—Until recently the royal palace at Berlin has been lighted only by candles. Both the father and the grandfather of the present Kaiser were opposed to gas and would not allow it to be introduced into the palace. Emperor William has had gas put in, and is now arranging for electric lights.

DISCOUNTENANCING CELIBACY.—Georgia is going to tax bachelors. A bill for that purpose has been brought into the Georgia Legislature and the House Committee on hygiene and sanitation has reported it favorably. Under its terms it will cost a Georgian $25 to begin the bachelor business at thirty years of age, and on a rising scale of $25 for five years a man of sixty and over will be at the expense of $200 per annum for the privilege of going without a wife.

FIRST COLORED FEMALE DOCTOR.—Novelties in the way of doctors *quoad* race, sex, sect, condition, etc., have become somewhat rare of late. We have recorded the evolution of the first Chinese doctor, the first female homœopathic doctor, the first lady medical Brahmin, etc. Despatches now furnish us with the report that the first colored lady medical doctor has just passed the Alabama State Board and is qualified to practice medicine. The reports are modest, in that the doctress is said to have passed with simply a high average. We trust that Doctress Dillon will be successful. The colored physicians whom we have met have been modest, earnest, and industrious, and they have shown better than many others the capacity for progress of their race.—*Med. Record.*

BRIGHT STORIES.

A MYSTERY OF THE MIND.

(*Concluded from page* 556.)

The idea that Madelaine might be at that moment confined with lunatics within a few yards of where we were standing put me almost out of my self-control, and I was for taking summary measures on the spot. Heath endeavored to moderate my impetuosity by reminding me that, first, Madelaine might not be there; and, secondly, that the law was able to free her, if wrongfully confined, better than any violence on my part could do it. "Let us do this," he said finally; "we will go in together, as Mr. Heath and friend. In that way we can gain admittance to the house. Mrs. Trench does not appear unless called for, and Glenn does not know you by sight. Then we'll find some means of determining whether the young lady is in the house, and proceed accordingly."

For answer I pulled the bell. The gate—an iron barred door, boarded behind and painted a dark green—was opened by a man-servant, who, on seeing Heath, at once admitted him and his "friend," closing the gate after us. But as I was preparing to ascend the steps I stopped short with a startled exclamation. The steps, with the oddly shaped foot scraper at the top; the brown door with yellow mouldings and a brass knocker in the form of a dog's head; the square front of the house, with its five windows protected by light but strong iron gratings; the two fantastically trimmed yew-trees on either side of the entrance—all these things I certainly looked on now for the first time in my life; and yet they were as familiar to me as my own face in the looking-glass.

I could not explain this to Heath, for it was a part of the "mystery" to which I have already alluded, and which I had omitted in the account of my affairs, that I had given him. It is enough to say here that it removed the last shadow of doubt from my mind as to Madelaine's being in that house. The conviction, instead of increasing my agitation, made me suddenly quiet and composed. I felt that the power had come into my hands and that I should know how to use it.

After a momentary pause I followed Heath up the steps and entered the house. We were shown into a large room on the left. At the further end of this room was another door, and almost immediately it was opened by a tall, dark-bearded man, with eye glasses—the man described to me by the house agent and known to Heath as Dr. Glenn. He advanced and greeted Heath with a courteous smile and bowed to me inquiringly. He introduced me as a professional colleague of his advising him in the case. "We may talk without reserve," he added.

He and the doctor then began a conversation to which I did not listen. I could only think of Madelaine being in the same house with me. In what room?

The door by which we had entered had not been wholly closed; it was ajar about a quarter of an inch. I fancied I detected a low, irregular sound, like distant voices speaking somewhere on the other side. Under pretense of examining an engraving that hung near the door, I moved over there. Yes, there were voices, apparently in a room upstairs. Suddenly they grew louder, as if the speakers had emerged into the hall, and then I knew Madelaine's voice.

Without a moment's hesitation I threw open the door and stepped across the threshold. In a loud but composed tone I said: "Madelaine, come down! I am here!"

There was a piercing scream; a quick rush above; a breathless struggle; but I had half mounted the stair and caught a glimpse of the dearest face to me on earth white, haggard, with great black eyes full of love, terror and eagerness. The woman in black had seized her by one arm, but she relinquished her hold on seeing me. In another instant I was holding my girl against my heart, and she fainted there. And there below stood Robert Heath, like a rock, motioning back the doctor. "This will be a very awkward business for you at best, Dr. Glenn," I heard him say. "You'd better let it stay where it is!"

It proved to be an awkward business, indeed, for the doctor and Mrs. Trench. But I will not enter into the details of their discomfiture, nor of the story of how they conspired together to defraud Madelaine of her fortune. Mrs. Trench had, it seems, conceived a passion for the doctor, and had determined to marry him; but about the same time she had met with a series of reverses in business, culminating in bankruptcy; and as the doctor stipulated for a dowry she had conceived the idea of robbing Madelaine. By secretly drugging her she succeeded in making the poor girl delirious, and while in that condition two physicians were found to certify to her insanity. Once imprisoned in Glenn's asylum her death would only be a question of time—and of no very long time either. But when Madelaine, in telling the story afterwards, came to the point where she had been carried in a cab to the doctor's door, not knowing whither she was going, I stopped her and said, "What day was that?" She replied that it was on Friday, the 13th of October, at about half-past 8 in the morning.

"Now listen to this," I said. "I have told it to no one else. I came from New Zealand by way of the Isthmus of Panama. When we were within a few days' sail of Panama, and 5 degs. north of the line, we had a stormy night, and I was on deck until after midnight. Towards 1 o'clock in the morning I went below and into my stateroom. I threw off my oilskins and laid down on my berth with most of my clothes on, for I did not know but the storm might grow worse. As I lay there in the dark, listening to the waves against the sides of the vessel, and the creaking of the timbers, and wondering whether I should ever see England and you again, all at once the end of the room seemed to grow light, and then to fade away, and I saw the front yard of a house, with five windows with light iron gratings, a brown door with a brass knocker like a dog's head, a couple of yews on either side, a flight of seven stone steps up to the door, and a peculiar foot scraper. The yard was enclosed by a high brick wall, with a green door into the street. I saw this door open, and you came in, with a man and a women leading you. The door was closed behind you, and then, as you looked up at the grated windows, you became frightened and began to struggle and cry out. But the man and the woman, whose faces I could not see, dragged you on and up the steps. You continued to struggle, and just before they forced you into the house you turned half around and called my name in a piercing voice three times—'Richard! Richard! Richard!' Then the door closed and you were gone; and at the same moment my stateroom was dark again. I had been half sitting up in bed, and now I got out and struck a match and looked at my watch. It was five minutes past one in the morning; and it was Friday, October the 13th! Now, what do you think of that?"

"Why, Richard, that was exactly what happened. I was dragged in there, and I did call you, and, oh! my soul went out to you! And it was the same day, too—only it was half past 8 instead of 1—"

"Half past 8 in London is five minutes past 1 in the longitude we were in at that time," said I. "I calculated it out the next day and wrote the whole thing down. Here it is!" and I showed her my note book. She read it and said: "After all we loved each other. So it was not so strange." I said, "It was a mystery of the mind." But she answered, "I would rather call it an intuition of the heart!"

Love and Digestion.—The Shan Chinese, a people living between Burmah and China, show their love for their parents by killing them and eating them to save them from the misery of old age.

CHRONOMETERS.

THEIR INVENTION, AND THE TRIBULATIONS OF THEIR INVENTOR.

Previous to the year 1691, watches had only the hour hand, a disadvantage which was removed by Daniel Quare of London, who added the minute hand, an improvement apparent to all. Nine years later the horizontal escapement in its perfected state, by George Graham, F. R. S., the pupil and colleague of the renowned Thomas Tompion, and sometimes called the "Father of English Clockmakers," was made public; and if not the most accurate, is still made on account of its economy in almost countless numbers. Till the appearance of this escapement in 1700, there was no other in existence—with the exception perhaps of some obscure experiments—than the old "vertical," now known as the "verge" escapement. In the same year the ingenious device of jewelling the parts most subject to wear was introduced into this country by "M Facio, a native, of Geneva, who came to Paris with this art as a secret; but not being well received, either by the Duke of Orleans, at that time Regent of France, or by the watchmakers there, he repaired to London with it, which was at that time a school where the art of watchmaking was more cultivated than at Paris." With these explanations we now come to the year 1714, when the English Government appointed a commission for the purpose of investigating the longitude question. One of the members of this body, which was known as the Board of Longitude, was the celebrated Sir Isaac Newton, who prepared an exhaustive paper on the subject, and indorsed the old opinion that a "true timekeeper" would solve the question. This recommendation was laid before Parliament, and shortly afterward there was published "An act for providing public reward for such person or persons as shall discover the longitude at sea." Sir Isaac, who was deeply interested in horology and in touch with all the latest improvements, was evidently sanguine that a true timekeeper could be made, provided the incentive was strong enough to induce any one to devote his time as a means to that end. So the reward was fixed at ten thousand pounds if it defined the longitude to within one degree; fifteen thousand to within two-thirds, and twenty thousand to within half a degree—these distances being respectively sixty, forty and thirty geographical miles. At this time, there were then living several eminent horologists, whose well-known abilities, one thinks, might have induced them to claim this honor; yet there is no authentic record of any application till fourteen years after it was first offered. John Harrison, who invented and made the timekeeper which gained this reward, was born at Foulby, near Pontefract, in Yorkshire, in 1693. Of his early life little seems to be known, further than that he assisted his father, who was joiner and cabinet-maker, and in addition to this occupation undertook the repairing and cleaning of clocks and watches. From this fact it is no doubt traceable that his son John had his great mechanical abilities directed into the channel by which he in after years made himself famous. When quite young he seems to have been an enthusiastic worker among clocks and watches, and is said to have made some of the former with "frames of wood." Although this indicated his constructive and imitative faculties—which in mechanics are indispensable—yet his fame rested on higher attainments than these alone, for, in addition to them, he possessed inventive powers of the highest order, along with a logical mind: and as a scientist in all that related to horological philosophy, his productions are a monument to his talents. The mere making of the separate parts of a watch or clock does not constitute a timekeeper. Each article is subject to its own laws, which were only understood by a long series of observations and experiments. The expansion and contraction of metals through changes in temperature

the varying fluidity of the lubricant, magnetic disturbances, irregular supply of force to the escapement, want of isochronism in the pendulum and balance spring, were all elements of disturbance, and to counteract these was the life work of John Harrison. It is beyond the scope of this article to give a technical description of his inventions; the principles involved, and his intricate mechanism, make even the attempt of anything like lucidity a hopeless task; and in view of this, the remarks thereon must needs be confined to their popular aspect. Harrison, who was twenty-one years of age when the decision of the Board of Longitude was made public, was then, or soon afterward, engaged in devising some means to counteract the expansion and contraction of metals by heat and cold, and his efforts were crowned with success by the production of the "gridiron compensation pendulum." The reward offered seems to have directed his attention to remedy the same defect in a watch, which defect, in long voyages embracing wide ranges of temperature, was one of its greatest failings. With this view, then, he prepared drawings of a scheme, including an original escapement, took the same to London, and there showed to Dr. Halley, who was then Astronomer Royal. In principle, the invention depended on a laminated bar of brass and steel fixed at one end, the free end carrying two curb pins embracing the balance spring; and according as the bar shrunk or expanded, it regulated the length of the spring. It acted, in short, as an automatic regulator. It has since been entirely superseded by more exact methods. Dr. Halley, seeing there was something in the invention, gave its author an introduction to the practical George Graham, who advised him, before applying to the board for assistance, to get his machine constructed. This was in 1726; but it was not till 1735 that any real success attended his efforts. A timekeeper which he then tested against the motion at sea in a river boat on the Humber answered his expectations so well that it was taken on a voyage to Lisbon, thus testing its powers of resisting both motion and temperature. The experiment was attended with most gratifying results. For this the board advanced him £500, and he was advised by them to make another, but on a smaller scale. In 1739 he appeared before the board with his second instrument; but, for some reason or other, it did not meet their approval. After the lapse of two years he was back before the board with his third timekeeper, much smaller and greatly improved, and for this he received the gold medal Royal Society. In 1758 Harrison applied to the Board of Longitude for permission to have his instrument officially tested by sending it to sea in a vessel bound for a voyage that would try its capacities in all conditions. After a considerable and quite unnecessary delay this was granted; and on November 18, 1761, William Harrison, the inventor's son, was despatched with it to Jamaica in the good ship Deptford. After being eighteen days out, the vessel, according to the then usual method of determining the longitude, was found to be 13 deg. 15 min. west of Portsmouth; while, according to Harrison's timekeeper, it was stated to be 15 deg. 19 min., a difference which the ship's navigators were not disposed to admit. Young Harrison, however, having confidence in his "watch," stoutly stood by its accuracy, and maintained that a certain island would be sighted next morning if it was properly defined on the chart. The captain, to settle the dispute, steered a course necessary to that end; and next morning, to his chagrin and Harrison's joy, the "watch" was up to time. The same results were obtained as island after island were passed; and on their arrival at Port Royal, after a voyage of over two months, the timekeeper was found to be five seconds slow; and on its return to England, after being away over five months, its error was not a minute and a quarter. Now, according to the Act of 1714, Harrison was justly entitled to the full reward of £20,000, as his instrument had defined the longitude to a point considerably less than the least distance specified by that act. But Dr. Maskelyne, who was afterward the Astronomer Royal, through some freak, would not consent to its being paid; besides, some of the other members of the board thought this astonishing accuracy was merely accidental. It was at length agreed to give an advance of £2,500; but on Harrison justly remonstrating, this sum was doubled and the balance promised when all doubts were at rest. A second voyage was then directed to be made, and on March 24, 1764, William Harrison again left the shores of his native land on board of the man-of-war Tartar, bound to Barbadoes. Every precaution was taken this time that foresight could suggest to prevent misunderstanding. The instrument was placed under three locks and keys—one being kept by Harrison, another by the captain, and the other by the navigating officer, so that, when it required winding, all three were bound to be present. On its return in September of the same year its performance was found to have quite realized the expectations of its maker. The board then paid him another five thousand pounds, withholding the balance till he had given fuller instructions to enable it to be reproduced. Larcum Kendall, who had been an apprentice of Harrison's, accomplished this; but he refused to commence without a sum of four hundred pounds being paid to him in advance. After several years of delay and many acrimonious discussions with the board, John Haraison finally, in 1767, received the balance of the £20,000. He was then in his seventy-third year. His timekeepers, which are still in existence, are the property of the Government, and are officially in charge of the Astronomer Royal in Greenwich Observatory.—*Chambers' Journal.*

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

November.

MEATS.—Beef, mutton, pork, venison.

POULTRY AND GAME.—Chicken, duck, geese, grouse, hare, partridge, pheasant, pigeons, rabbits, turkeys, widgeon, wild ducks, woodcock.

FISH.—Brill, carp, cod, whiting, salmon trout, perch, smelts, oysters.

VEGETABLES.—Artichokes, broccoli, celery, potatoes, turnips, cauliflower, cabbage, carrots.

FRUITS.—Apples, pears, quinces, grapes, nuts.

PRACTICAL RECIPES.

PEA SOUP.—Cover one quart of split or dried peas with water and let them soak overnight, in the morning drain them and put them to cook in a gallon of fresh water with six sprigs of parsley, some celery seed, cayenne pepper and salt to suit the taste. Boil until the peas are soft, then mash them through a sieve, return them to the soup, add a lump of butter and serve with dice of fried bread.

STEWED CELERY.—Cut some stalks of crisp celery into inch-length pieces, and stew them in a cup of good clear soup stock until tender, drain them out, thicken the gravy with browned flour, return the celery to it, boil up, season to taste with salt and pepper and serve.

LITTLE PIGS IN BLANKETS.—Slice some breakfast bacon so thin that it is almost transparent; select fine large oysters and wrap a piece of the bacon around each one, securing it with a wooden tooth-pick, or a small skewer. Have ready a very hot pan and fry the oysters until the bacon is brown and crisp, then serve at once.

CREOLE FISH-SAUCE.—Put in a bowl one tablespoonful Worcestershire sauce, one quarter teaspoon cayenne pepper, one large table-spoonful butter, two tomatoes, one small onion, and one table-spoonful parsley. Have the tomatoes, onions and parsley chopped very fine. Boil all these ingredients together for ten minutes, then strain. Add salt to taste.

VEAL CROQUETTES.—Boil two pounds of veal until it is very tender, then remove the bones and skin and chop the meat very fine; take half a loaf of bread and moisten it with the broth in which the veal was boiled until it is as thick as mush, stirring it over the fire; before taking from the fire add two heaping tablespoonfuls of butter and three eggs, and stir till the whole looks like thin scrambled eggs; take from the fire and put with the meat, seasoning nicely with nutmeg or mace, or a little chopped parsley, sage and thyme, and a little onion chopped and fried; salt and pepper to taste. Let this stand until cold, then form into egg-shaped pieces, dip them in beaten egg and fine bread crumbs and fry brown in very hot fat.

BAKED EGGS ON TOAST.—Break some new laid eggs onto a flat baking-dish, keeping them separate, sprinkle them with salt and pepper and pour over them a little cream; over all sift grated cheese and bread crumbs and bake. Serve in the dish in which they were baked, garnished with watercress or fresh parsley.

APPLE JELLY.—Peel, core and quarter good firm ripe apples, boil them in new cider until perfectly tender, then strain them through a sieve, being careful, however, not to press them, or the jelly will not be clear. Measure your juice, and to each pint add a pound of sugar, and boil until it jellies, which should be in twenty minutes or half an hour.

ARRANGING THE TABLE.

A LEADING AUTHORITY TELLS HOW A TABLE SHOULD BE SET.

"Learn first," says Mr. Delmonico, in an article in the November *Ladies' Home Journal*, "how to set a table." A round table is better than a square table, if the dining-room is large enough to permit it. If not, then the ordinary oblong extension table must be used. The round table is much more preferable and easier to seat people at, besides it gives a suggestion of the famous 'King Arthur and the Knights of the Round Table.' A few prominent society women still cling to the old-fashioned long, narrow table. Mrs. Astor, for example, still uses that style of dining-table in order that her famous gold dinner set may be placed to the best advantage. Mrs. August Belmont, on the contrary, prefers an oblong table, and the decorations for an elaborate dinner are carried out to make the shape more pronounced. Flowers should never be absent from the dinner-table. No matter how homely, they add to the picturesqueness of the feast. Let us see how a table is set for a fashionable dinner-party. On the table is first placed thick flannel cloth, the thicker it is the better, as it prevents noise of the dishes as they are placed on it. Over this is spread a snowy-white damask table-cloth, bearing the family crest or coat-of-arms. Sometimes over this is still placed another, of elaborate embroidery and lace, lined with pink or yellow satin, as taste dictates, or whatever color is to predominate at the dinner. The plates are first placed upon the table. As these are to remain until after soup is served, they are always the handsomest in the gold or china sets, as the case may be. Don't crowd. Each guest should be allowed a space of two feet or twenty-six inches, if the table will admit of it, and the plates placed at equal distances apart. Place dinner forks to the left of each plate; also an oyster fork, with prongs resting on the edge of the plate. On the right must be a dinner knife and a spoon for soup. The glasses are at the right of each guest on a line with the inner edge of the plate. The

water glass is set next to the plate; then glasses for whatever other beverages are intended to be served. A glass, whether of water or any other liquid, should never be filled more than three-quarters full.

BENEFICIAL FOODS.

WASTE IN THE PRODUCTION AND USE OF ANIMAL FOODS, AND ITS PREVENTION.

We condense for our readers the following from an interesting paper on the food question, by Prof. W O. Atwater, in the November *Century*: "We are better fed than the people of Europe, and do more work; but we use more food than we need. Part of the excess is simply thrown away; the rest is eaten, to the detriment of health. Our chief wastefulness is with meats and sweetmeats. People in the United States are generally able to have the kind of food they like and all they want of it. Sugar is abundant and cheap, and is consumed in immense quantities. But the worst wastefulness is in the production and use of meats. People of this country buy excessive quantities of meat, especially of fat meat. A moderate amount of meat is necessary, but the trouble is our lack of moderation. Not only is its excessive use injurious, but the waste it involves is greater than is implied in the actual cost. The chief function of meats is properly to supplement bread, potatoes, and other vegetable foods; in other words, to supply what they lack for our best nourishment. Our foods furnish us material to build up the framework of our bodies, to repair waste, to yield heat to keep us warm, and to give us muscular strength for work. Blood and muscle, bone and tendon, are made from the so-called protein compounds, such as the myosin (basis of lean meat), casein (curd) of milk, and gluten of wheat. For fuel to yield heat and muscular strength we use carbohydrates, such as starch and sugar, and fats like the oil of corn and wheat, the fat (butter) of milk, and the fat of meats. Vegetable foods, such as wheat, corn and potatoes, have relatively little protein, and their nutritive material consists mainly of carbohydrates. Beef, mutton, fish, milk, and other animal foods furnish protein in large quantities and in easily digestible forms. Best nourishment requires sufficient protein to build up our bodies and supply their wastes, as well as carbohydrates and fats for fuel. Meats and other animal foods furnish the protein in which vegetable foods are relatively deficient. Meat is a manufactured article, requiring a large amount of raw material. The making of meat is a process of transforming the vegetable protein, fats, and carbohydrates of grass and grain into the animal protein and fat of beef, pork and mutton. The same applies to milk, eggs, and other animal foods. With most economical feeding it takes many pounds of hay or corn to make a pound of beef or pork. A large amount of soil product must be consumed to produce a small amount of animal food. Hence animal foods are costlier than vegetable. This explains why in most parts of the world meat is the food of only the well-to-do, while the poor live almost entirely on vegetable food. Ordinary people in Europe eat but little meat, and in India and China none at all. Meat-making in the United States to-day is unnecessarily wasteful because of the excessive fatness of our meats. Part of the fat is trimmed off the meat by the butcher, part goes from our plates into the garbage barrel, and part is eaten. Many eat more fat, both in meat and butter, than is necessary or healthful. The agricultural production of this country to-day is one-sided. Our animal and vegetable food products, taken together, contain relatively too little of the flesh-forming ingredients—those which make muscle and tendon—and too much of those which serve as fuel. From careless culture and insufficient manuring, or other reasons, our vegetable products, and especially the grasses and grains, have come to contain smaller proportions of protein, by 25 to 40 per cent., than the same products grown in Europe. Our great staple grain, corn (maize), is poor in protein at best. This helps to explain the relative fatness of our meats. Our national dietary is likewise one-sided. Our food has too little protein and too much fat, starch and sugar. Statistics show that the quantities of fat in European dietaries range from 1 to 5 ounces per day, while in the American the range is from 4 to 16 ounces. In the daily food of professional men in Germany, who were well nourished, the quantity of fat was from 3 to 4½ ounces, while among Americans in similar conditions of life it ranged from 5 to 7½ ounces. The quantities of carbohydrates in the European dietaries were from 9 to 24 ounces, while in the corresponding American dietaries they were from 24 to 60 ounces. We eat much more meat than is necessary to supplement our vegetable food, and our meat is much fatter than is necessary. The sugary and starchy foods, of which we consume an excess, make the fat still less necessary. By the present method of meat production and use a very considerable amount of the grass and grain of farms and grazing regions is wasted, and worse than wasted. Agricultural reform will lead to the production of more and better food from less land. Dietary reform will result in the eating of less food per person, and food better adapted to the demands of health, work and purse."

ABSINTHE.

A COMPOUND WHOSE PRINCIPAL INGREDIENT IS WORMWOOD.

A writer in the San Francisco *Chronicle* says: "On my return from Switzerland I was detained a few hours at the little frontier town of Pontarlier, in the northern part of the Jura. I was told that the people of the department (Doubs), for a radius of thirty miles about Pontarlier, including necessarily a portion of Switzerland, depend almost entirely for their support on the making of cheese and the cultivation and sale of wormwood. The raising of wormwood, a bitter weed of American fields and gardens used by old women as a febrifuge and vermifuge, seems a curious industry, but all that can be produced finds a ready sale to the distillers of absinthe at Pontarlier, which is the centre of this extensive industry. Absinthe, it should be remembered, is the French for wormwood. Absinthe is made of wormwood, with the addition of other aromatic herbs that give the green color and render the taste more agreeable. When it is distilled with care (says a special plea by the distillers) and consumed in reasonable quantities it is a beverage tonic and refreshing. But too much of it should not be taken, even when it is good, for it contains a high percentage of alcohol. Many distillers simply macerate the wormwood and other herbs and steep them cold in alcohol made of beets or of grain, by which means the poisonous oils are extracted from the herbs. These poisonous qualities and the bad alcohols necessarily have a bad effect, and produce that rapid and dangerous state of intoxication that drinkers of absinthe have often noticed in regard to themselves. A beverage that operates on the nerves in such a manner as to produce instantaneous intoxication must necessarily be dangerous, first to the health, and ultimately to the reason. This effect itself shows that the liquor is of bad quality and should be condemned. A French physician says of wormwood: 'Its bitterness is its principal merit. It is tonic, stimulating, febrifuge and vermifuge. It is par excellence the herb of pale and feeble women. It is the quinine of the poor. A slight pinch is sufficient in a litre of boiling water,' etc. It is evident to the most ordinary apprehension that a liquor made from a good alcohol from an herb that has been in use the world over as a common domestic remedy, and has formed a part of the medical pharmacopœia from time immemorial, cannot be harmful if used in moderation. Two kinds of absinthe, or wormwood, are used in making the liquor at Pontarlier, the great and the small, the first for its bitter qualities, and the last, which is gathered immature, chiefly to act in giving the delicate green color. The other plants employed in the distillation are balm, caraway, anise and hyssop. Balm is classed medicinally as anti-nervous, an important antidote in a liquor considered generally as acting too forcibly on the nervous system. The qualities of caraway and anise are familiar to every one. The last is greatly used in medicine and in many other ways for its flavor and perfume. The caraway used at Pontarlier comes from the south of France, the best anise from southwestern France and from Andalusia, in Spain. The flowers of hyssop are regarded as stimulating and expectorant. All the plants used in the making of absinthe, it will be seen, have recognized medical qualities, and all, probably, as tea and coffee, a poisonous essence that should not be extracted in the process of distillation, and so become a part of the liquor. As to its history, absinthe, though it has not been fashionable till within a few years past, was invented some hundred and fifty years ago at Couvet, a little city of Switzerland, a few miles beyond Pontarlier. The inventor could never have anticipated the fame it would achieve. After having passed through various hands it was purchased by the ancestor of the present distillery of Pontarlier, to which place the industry was transferred near the close of the last century, since which epoch the use of the liquor has been gradually extending. The principal distillery of Pontarlier, which has its patent from the inventor, is an immense establishment, covering several acres, admirably appointed in every respect, kept with extraordinary neatness, and, for the convenience of transportation, connected with the railroad station, some three-quarters of a mile distant, by a track of its own. Some questions regarding the habits of the workmen were answered with a certain freedom. I desired to know how they were treated, and if from daily contact with a liquor reported so dangerous they did not acquire the habit of using it too often. My guide said that happened sometimes, but not as often as it happened in distilleries making no matter what kind of liquor. As a general thing the workmen were satisfied with the odor with which the place was impregnated, and which new-comers found somewhat intoxicating. Every employe was given a glass of absinthe every morning, with a half bottle of red wine, and they were all generally temperate and contented."

CORKS.

HOW THEY ARE MADE, AND WHAT OUT OF.

Champagne corks of the finest quality cost about a cent a piece wholesale. To the eye of the ordinary observer they do not greatly differ in quality from other corks, but, as a matter of fact, they are in a great many ways peculiar. The great champagne houses often engage the whole output of cork-cutting establishments in Spain and Portugal. These corks must be of the best bark, and the most skilful cutters are employed in their manufacture, while the same is true of all corks used with the finer wines. There has been a marked advance in the manufacture of corks within the last twenty-five years, but champagne corks are made just as they were when the first champagne was bottled. Less than a generation ago the idea of a cork-cutting machine was scouted. Now most of the corks used for ordinary purposes are made by machinery, and they are turned out by the million at such prices that the hand cork cutters of this country have been almost entirely driven out of the business. The reason for making champagne corks by hand is curious and interesting. The cork machine is provided with circular knives of razor-like edge. Now, the crude cork is so rough and hard that if it were applied to one of these rapidly

revolving knives the knife would at once be ruined; so crude cork that is to be cut by machinery must be softened in a steam vat. It comes out almost pulpy, and cuts like cheese. But the steam takes the "life" out of the cork. Its elasticity is gone, never to be recovered, and when the machine-cut cork is driven into a bottle the cork tends to shrink and permit leakage. Furthermore, the machine-made cork is mathematically round, while the necks of bottles are more or less irregular. As the machine-made cork has lost its elasticity, its smooth round surface cannot swell out to fill any irregularity in the neck of the bottle, and here is another source of leakage. The hand-made cork is quite a different affair. The crude cork to be cut by hand is first soaked in tepid water until almost ready to swell. In this condition it is taken out and turned over to the cutter. Spanish cork cutters use three knives. One is a long curved knife arranged with a gauge for regulating the size of the piece of the cork cut off. This knife is used for cutting the cork into long strips. Another and smaller knife cuts the strips up into blocks, and a third and very sharp knife is used for producing the finished cork. This knife has a blade of fine steel nearly hidden in a jacket of iron. The iron pocket is to give the knife rigidity, and the cork cutter applies not the the knife to the cork but the cork to the knife. He rests the knife on the edge of a table and presses the cork down upon the blade. The tendency of this is to curve the blade, and a curved blade would produce a hollow cork. German and American cork cutters use a thin knife, which comes from the factory straight, but is bent by the cork cutters themselves. The curved side is turned up in working, and the result is that the kink straightens under the pressure of the cork, and the latter is cut straight and not concave. The cork cutter always has a whetstone on his table and a strap upon his knee. He applies the knife to the strap after each cork is cut, and less frequently to the whetstone. Cork has a peculiar power of dulling the sharp steel with which it is cut. Hand-made corks retain their elasticity, and, not being mathematically round, they easily snug themselves into the irregularities of bottle-necks. Before being driven into a bottle of wine the cork is soaked in water, and then moistened with wine It goes in tight, absorbs some of the wine, swells, and remains swollen. When corks have been much handled in cutting they are washed clean in a weak solution of oxalic acid before being used. This country receives the best corks, as of everything else European. Thousands of men, women and children, in the mountains of Spain and Portugal, are busied in cutting cork. It is a domestic trade, and it occupies whole villages. Agents from the factories and export houses of Seville and Lisbon go through the mountain villages each year buying up the corks in enormous quantities. The agent of an importing house in this city cabled the other day that he had just returned from the Sierras after having purchased 10,000,000 corks. The corks, as purchased in the native villages, are of all sizes and qualities. They are sorted in the cities, baled in gunny cloth, paper, and gunny cloth again, and shipped to this country by the ton; once here, many of them are recut by hand at the rate of twenty gross a day. So fastidious are some bottlers that the cork importers have to keep in their employment several cork cutters to recut such corks as do not suit customers. Immense quantities of crude cork are brought into this country and cut by machinery. The crude cork varies from half an inch to two and a half inches in thickness, and it is of many qualities. The finest quality is cut up by hand into wine corks; the cheaper qualities are cut by machinery into "soda corks," cork soles, and what not. There is an enormous sale for small corks, such as are used by druggists, and tons of cork are used every year in eyeglass dips. Only the finest cork is used for this purpose, and it is difficult to obtain a proper quality. There survive in this city a few hand cork cutters who still contrive to make a sort of living in competition with the cork-cutting machines and the peasants of Catalonia. One of these men hangs out a curious sign in an east side street; it is a glass case containing the mode of a house all of cork. It is possibly the house that Jack built, for there are bits of cork to simulate bags of grain. The factory is a shed in the rear of an ordinary dwelling-house. Here, with the aid of some simple machinery, the cork cutter manages to eke out an existence. His chief grievances are the competition of machinery and the problem of disposing of the waste. Light as cork is, tons of clippings accumulate, and although various uses have been discovered for this refuse, it brings little or nothing when sold, and constantly accumulates, to the embarrassment of the cork cutter. There is a comfortable little fortune for the man who shall devise some really profitable use for cork clippings. Cork growing in Spain and Portugal is an extremely precarious business, and it demands considerable capital. Only the other day a man in this city was seeking a partner with $100,000 to put into a cork forest in Spain, with a lease of 150 years. The bark is cut only once in ten years, but as the forests are very large, the grower manages to obtain an annual crop. This year's crop is just beginning to come into the American market, the trees having been barked in July and August. Crude cork comes over in great bales weighing from 175 to 225 pounds each. The heat to which it is subjected in order to flatten out its curves also drives out most of the insects, such as one would naturally expect to find in bark. As cork is too light to form a cargo of itself, the cork-carrying vessels also bring oil, olives, wine, and heavy merchandise of various sorts.

Subscriptions $1 per year. Now is the time to subscribe.

BUFFALO LITHIA WATER

For BRIGHT'S DISEASE OF THE KIDNEYS, THE GOUTY DIATHESIS, Etc.



Dr. WM. A. HAMMOND'S Sanitarium for Treatment of Diseases of Nervous System, 14th Street and Sheridan Avenue, Washington, D. C.

Dr. WM. A. HAMMOND,

WASHINGTON, D. C.,

Surgeon-General U. S. Army (retired), formerly Professor of Diseases of the Mind and Nervous System in the University of New York, etc., says:

"I have for some time made use of the

BUFFALO LITHIA WATER

in cases of affections of the Nervous System, complicated with Bright's Disease of the Kidneys, or with a Gouty Diathesis. The results have been eminently satisfactory. Lithia has for many years been a favorite with me in like cases, but the

BUFFALO LITHIA WATER ACTS BETTER THAN ANY EXTEMPORANEOUS SOLUTION

of the Lithia salts, and is, moreover, better borne by the stomach. I also often prescribe it in those cases of cerebral hyperæmia, resulting from over mental work—in which the condition called nervous dyspepsia exists—and generally with marked benefit."

WATER IN CASES OF ONE DOZEN HALF GALLON BOTTLES, $5.00, F. O. B. HERE.

☞ For sale by all first-class Druggists, and Pamphlet sent to any address.

THOMAS F. COODE, Proprietor, Buffalo Lithia Springs, Va.

☞ Please mention the AMERICAN ANALYST.

BUSINESS NOTES.

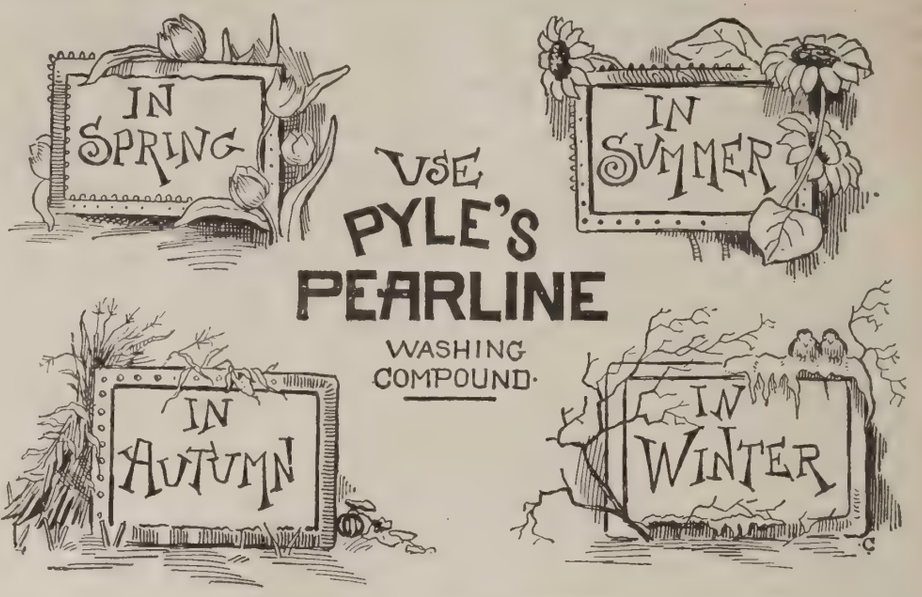
A SYLLOGISM.

Teacher (to the class). "What is a syllogism?" *Pupil.* "The logical form of every argument, consisting of three propositions, namely, a major and minor premise and a conclusion. *T.* "Give an example." *P.* "Pure blood is the secret of beauty. Ayer's Sarsaparilla makes pure blood; therefore, Ayer's Sarsaparilla makes the secret of beauty." *A.* "Correct, both logically and medically."

HORSFORD'S ACID PHOSPHATE.

Recommended by physicians of all schools, for the brain, nerves and stomach.

AMPHIBIOUS BOAT.—A "locomotive steamboat" is being built in Sweden for the navigation of a chain of small lakes separated by falls. The boat is to be fitted with wheels, and power can be applied either to the propellor or to the locomotive driving wheels.



Beware Peddlers and some unscrupulous grocers will tell you, "this is as good as" or "the same as Pearline." IT'S FALSE—Pearline is never peddled, and if your grocer sends you something in place of Pearline, do the honest thing—*send it back.* 241 JAMES PYLE, New York.

FORCE OF WAVES.—Waves exert a force of one ton per square inch when they are only 20 feet high. At Cassis, France, granite blocks of 15 cubic meters have been moved by wave force.

GETTING RID of FLEAS.—A correspondent of the Washington *Star*, who has been studying the subject of getting rid of fleas, gives this as the result of his investigations: If those who are troubled with this insect will place the common adhesive fly paper on the floors of the rooms infested, with a small piece of fresh meat in the centre of each sheet, they will find that the fleas will jump toward the meat and adhere to the paper. I completely rid a badly infested house in two nights by this means.

CURIOUS CALCULATION.—A rapid penman can write 30 words in a minute. To do this he must draw his pen through the space of a rod—16½ feet. In forty minutes his pen travels a furlong, and in five hours and a third a mile. We make, on an average, 16 curves or turns of the pen for each word written. Writing 30 words in a minute, we must make 43 curves to each second; in an hour, 28,000; in five hours, 144,000; and in 300 days, working only five hours each day, we make not less than 43,200,000 curves and turn, of the pen! The man who makes but 1,000,000 strokes of the pen a month has done nothing remarkable; there are those who make four times that number. Here we have in the aggregate a mark 800 miles long, to be traced on paper by each writer in a year. In making each letter of the ordinary alphabet we make from three to seven strokes of the pen—on an average, three and a half to four.—*St. Louis Republic.*

Cleveland's is the Baking Powder used in the U. S. Army.

Happy and content is a home with "The Rochester; a lamp with the light of the morning. Catalogues, write Rochester Lamp Co., New York.

Armour's Extract of BEEF.

The best and most economical "Stock" for Soups, Etc.

One pound equals forty-five pounds of prime lean Beef.

Send to us for our book of receipts, showing use of ARMOUR'S EXTRACT in Soups and Sauces.

ARMOUR & CO., Chicago.

GOITRE, or THICK NECK.

I have a positive, speedy, cleanly, harmless and almost inexpensive cure. Come or write to me at 28 Arlington Court, CLEVELAND, Ohio. It is no iodine smear. Cure made permanent.

Dr. J. CASKEY.

Fine Table Wines

From our Celebrated Orleans Vineyard.

Arpad Haraszthy & Co.

Producers of the ECLIPSE CHAMPAGNE, 530 Washington St. SAN FRANCISCO.

GROWERS OF

Chateau d'Orleans, the highest grade Claret made in America.

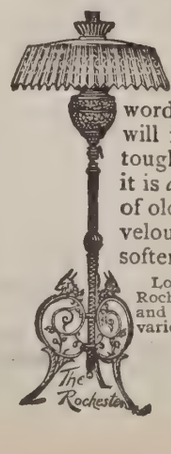
Cabernet Blend, the richest and finest of Table Clarets.

O V Chablis, possessed of all the delicate pungency of its French counterpart.

O V Sauterne, with the exact character and *Seve* of imported Sauternes.

The **Chateau d'Orleans** and **O V Chablis** are sold in glass only.

"Seeing is Believing."



And a good lamp must be simple; when it is not simple it is not good. *Simple, Beautiful, Good*—these words mean much, but to see "The Rochester" will impress the truth more forcibly. All metal, tough and seamless, and made in three pieces only, it is *absolutely safe* and *unbreakable*. Like Aladdin's of old, it is indeed a "wonderful lamp," for its marvelous light is purer and brighter than gas light, softer than electric light and more cheerful than either.



Look for this stamp—THE ROCHESTER. If the lamp dealer has n't the genuine Rochester, and the style you want, send to us for our new illustrated catalogue, and we will send you a lamp safely by express—your choice of over 2,000 varieties from the *Largest Lamp Store in the World.*

ROCHESTER LAMP CO., 42 Park Place, New York City.

"The Rochester."

GRANT.

SHERMAN.

SHERIDAN.

McCLELLAN.

GEN. GRANT'S MEMOIRS.

Original $7 Edition for 30 Cents.

NO book, excepting the Bible, has ever had such a sale in the United States as General Grant's Memoirs. 650,000 copies have already gone into the homes of the rich, but the subscription price of $7.00 has placed it beyond the reach of people in moderate circumstances. **If 650,000 people have been willing to pay $7.00 for Grant's Memoirs, there must be a couple of million people in the United States who want them, and will jump at the opportunity** to buy them at the low figure here offered.

We will send you General Grant's Memoirs, publisher's original edition, best paper, cloth, green and gold binding, hitherto sold by subscription at $7.00,

FOR 30 CENTS!—FOR 30 CENTS!—ABSOLUTELY ONLY 30 CENTS!

and absolutely a proposition such as has never been made in the history of book publishing. The two splendid volumes of Grant's Memoirs, of which 650,000 copies have been already sold—not a cheap edition, but the best—for 30 cents; provided you send your subscription of $1.00 to the **AMERICAN ANALYST** one year, and also a subscription of $3.00 for the **COSMOPOLITAN MAGAZINE,** the brightest and cheapest of the great illustrated monthlies, itself equal to the best $4.00 magazine.

The **COSMOPOLITAN** is enabled to make this offer because of **the purchase of 600,000 volumes at a price which even publishers would deem impossible, and with the idea of running up its circulation to half a million copies.** By contract with the **COSMOPOLITAN,** and at no profit to us, we are enabled to offer our readers a share in the low price obtained through the largest purchase of books ever made in the history of the world.

If, however, you have Grant's books, our offer will permit you to take instead,

GEN. SHERMAN'S MEMOIRS, 2 Vols., sold by subscription for $5.00
GEN. SHERIDAN'S MEMOIRS, 2 Vols., sold by subscription for 6.00
GEN. McCLELLAN'S MEMOIRS, sold by subscription for . . . 3.75

All of these are bound in cloth, green and gold, in uniform style with Grant's Memoirs.

Send us at once $3.00 for year's subscription to the **COSMOPOLITAN,** $1.00 for year's subscription to the **AMERICAN ANALYST,** and 30 cents for a set of Memoirs—$4.30 in all—to which add postage on the particular set of Memoirs selected.

WHY DO WE MAKE THESE GRAND OFFERS?

Simply because we want every intelligent family to keep well informed as to the popular science of this progressive era. We publish the **only popular journal on this subject—THE AMERICAN ANALYST.** Its subscription list is already very large; but we want at least **Fifty Thousand additional subscribers before January 1, 1892.** We know that, if we shall get them, we shall be able to hold most of them as permanent readers of our periodical. So at present sacrifice and at great cost, we have entered into a combination. The **COSMOPOLITAN** is the brightest and cheapest of the great illustrated monthly magazines; it gives annually 1,536 pages by the ablest writers, and over 1,200 illustrations by the ablest artists; and is just as interesting to the young boy or girl as to the oldest grey head. Now, then, we ask you to send us merely $4.30, and, on receipt of same, we will mail them to you regularly for **one year,** and will also send you (making no charge for the books) a set of **GENERAL GRANT'S MEMOIRS,** or either of the other works that you may select. **NO SUCH OFFER AS THIS WAS EVER MADE BEFORE BY ANY PUBLISHER SINCE TIME BEGAN!**

UNLESS OTHERWISE DIRECTED,

we shall invariably ship the books by express, charges to be paid by the receiver. If you wish the volumes forwarded by mail, you must distinctly say so at the time when you send us your address and the Money; and you must also enclose postage to prepay the packages at the following rates: **GRANT'S MEMOIRS,** 96 ozs., 48c.; **SHERMAN'S MEMOIRS,** 92 ozs., 46c.; **SHERIDAN'S MEMOIRS,** 84 ozs., 42c.; **McCLELLAN'S MEMOIRS,** 48 ozs., 24c. The government rate for postage on books is one-half cent per ounce. The **COSMOPOLITAN** and **AMERICAN ANALYST** are sent to subscribers free of postage.

SEND ALL ORDERS ADDRESSED

THE ANALYST PUBLISHING CO.,

19 Park Place, New York.

HARTSHORN'S SELF-ACTING SHADE ROLLERS

NOTICE SCRIPT NAME OF Stewart Hartshorn ON LABEL, AND GET THE GENUINE HARTSHORN

THE New Model "HALL"



A Perfect Typewriter. Best Manifolder. Terms to Agents Liberal. Portable. Inexpensive. Writes All Languages. *Read Mr. Howell's Opinion.*

"I wish to express my very great satisfaction with the Hall typewriter. Impressi ns and alignment are both more perfect than any typewriter that I k r ow, and it is simply a pleasure to use it. It is delightfully simple and manageable."

(Signed) W. D. HOWELLS.

Send for Catalogue and Specimens of work.

Address N. TYPEWRITER CO., 10 Temple Pl., BOSTON.

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,

HOWARD STREET. BOSTON, MASS.

SWIFT'S

CHOICE

Chicago Dressed Beef

AND

MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,

UNION STOCK YARDS,

CHICAGO, ILLS.

EVERY one in need of information on the subject of advertising will do well to obtain a copy of 'Book for Advertisers," 368 pages, price one dollar. Mailed, po-tage paid, on receipt of price. Contains a careful compilation from the American Newspaper Directory of all the best papers and class journals; gives the circulation rating of every one, and a good deal of information about rates and other matters pertaining to the business of advertising. Address

ROWELL'S ADVERTISING BUREAU,
10 Spruce St., New York.

$5, $10 and $20

CONFEDERATE BILLS,

only five cents each. AGENTS WANTED.

SOUTHERN STAR, Atlanta, Ga.

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

BROMO SODA.

Useful in Nervous Headache, Sleeplessness, Excessive Study, Over Brainwork, Nervous Debility, Mania, Etc.

DOSE—A heaping teaspoonful in half a glass of water, to be repeated once after an interval of thirty minutes, if necessary. Each teaspoonful contains 30 grs. BROMIDE SODIUM and 1 gr. CAFFEIN.



SUPPLIED BY ALL DRUGGISTS

Ask for (Bromo-Soda, Warner & Co.) and take no other "Bromo."

Pure Lager Beer,

"IMPERIAL" and "CULMBACHER"

Brewed & Bottled

SPECIALLY FOR HOTELS, CLUBS AND PRIVATE FAMILIES

BY

Beadleston & Woerz

291 W. 10th St. New York.

Orders by Postal Card promptly attended to.

We can save you Fifty Dollars when you Build. See;



A complete set of Plans to build from, simply state about price of dwelling desired. 25 cts. in stamps. Our book "Beautiful Homes." 25 cts. Our monthly book "The National Builder," 25 cts. Address

The National Builder, Adams Exp. Bldg., Chicago, Ill.

BLAIR'S PILLS.



Great English Remedy for GOUT, RHEUMATISM and KIDNEY COMPLAINTS.

SURE, PROMPT and EFFECTIVE.

Large Box, 34; Small, 14 Pills.

At all Druggists, and

224 WILLIAM STREET, NEW YORK.

THE ORIGINAL AND GENUINE (WORCESTERSHIRE SAUCE).



LEA & PERRINS' SAUCE

In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—

Lea & Perrins

Beware of Imitations; see that you get Lea & Perrins'

For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS, NEW YORK.

RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,
184 Greenwich St., N. Y.

A FORTUNE IN A FORTNIGHT!

Can't be expected, but thousands are making good livings from our FAMOUS TRADE SECRETS; Nearly 3000 GUARANTEED receipts of every business sent for $1 00. List and particulars free.

Box 441. EUREKA PUBLISHING CO., Chicago, Ill.

FORTY DOLLARS FREE.

How many words can you make using only the letters in the words **"Hat Identifier?"** First prize, $25; second prize, $10; third prize, $5; fourth prize, one dozen "Identifiers." Send a DIME for rules governing contest and sample "Identifier" to ILLINOIS METAL CO., Royal Insurance Building, Chicago, Ill.

A COLLEGE EDUCATION FREE!

In one of the oldest, most prominent Colleges in the country. **ABSOLUTELY FREE.** A chance of a lifetime. Do you want it? You do not need to invest a dollar. Write for particulars to one of the brightest and most original illustrated monthlies in America. Address,

BUSINESS WORLD, DETROIT, MICH.

GOLD MEDAL, PARIS, 1878.



W. BAKER & Co.'s Breakfast Cocoa

from which the excess of oil has been removed,

Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

TABASCO PEPPER SAUCE,

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced by connoisseurs to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY'S SON,

NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

ESTABLISHED IN LONDON, 1831.

DEAN'S PATENT Ardenter Mustard



W. G. DEAN & SON,
361 & 363 WASHINGTON STREET; 84, 86, & 88 NORTH MOORE STREET, N.Y.

AMERICAN ANALYST CLUB RATES.

WE have made arrangements by which we can furnish to our readers any of the periodicals named below at a club rate, with the AMERICAN ANALYST, at a considerable saving. Should any periodical not mentioned be desired, or several of the journals, drop us a postal card and we will give you a rate promptly. For sample copies address the publishers. Terms strictly cash, in advance.

	Publishers' Price.	Our Price, including AMERICAN ANALYST, One Year.
Arthur's Home Magazine	$1.50	$2.35
Babyhood	2.00	2.50
Century Magazine	4.00	4.50
Christian Herald, N. Y	1.50	2.00
Christian Union, N. Y	3.00	3.50
Cosmopolitan Magazine (See our Premium Offer.)	3.00	3.25
Cottage Hearth	1.50	2.00
Current Literature	3.00	3.50
Demorest's Magazine	2.00	2.50
Family Story Paper	3.00	3.25
Farm and Fireside	.50	1.40
Fireside Companion	3.00	3.50
Forum	5.00	5.25
Frank Leslie's Illustrated Newspaper	4.00	4.50
" " Popular Monthly	3.00	3.50
Garden and Forest	4.00	4.25
Godey's Ladies' Book	2.00	2.50
Golden Days	3.00	3.50
Good Housekeeping	2.40	3.00
Harper's Bazaar	$4.00	$4.50
" Young People	2.00	2.50
" Weekly	4.00	4.25
" Magazine	4.00	4.25
Home Magazine (Mrs. Logan's)	.50	1.25
Judge	5.00	5.00
Ladies' Home Journal	1.00	1.75
Ledger, New York	2.00	2.50
Life	5.00	5.50
Lippincott's Magazine	3.00	3.25
Magazine of American History	5.00	5.00
New York Weekly	3.00	3.50
Our Day, Boston	2.50	3.25
Outing	3.00	3.50
Peterson's Magazine	2.00	2.50
Popular Science Monthly	5.00	5.25
Puck	5.00	5.00
Review of Reviews	2.00	2.75
Scientific American	3.00	3.50
Scribner's Magazine	3.00	3.25
Youth's Companion	1.85	2.50

ADDRESS THE ANALYST PUBLISHING CO., 19 Park Place, New York.

A BUSINESS BENEFIT.

ADVANTAGES TO ADVERTISERS OFFERED BY THE "AMERICAN ANALYST."

It has not the limitations of a daily paper. No one reads yesterday's paper. A monthly lives at least a month, while a weekly is fresh four times a month, and its audience is not limited by geographical lines, but the circulation is all over the United States and Canada.

It contains matters of interest to everyone, especially the ladies of the household, and is, therefore, sure of a careful perusal. Our audiences are intelligent and of the better classes, who have money to spend, and any well worded advertisement in our columns, giving real information, will receive a careful perusal.

Our rates are as low as our circulation affords. Large circulation and original matter cost money and those advertisers who desire to realize these benefits must expect to pay reasonably for them.

Advertisements in our columns are permanent. Most of our subscribers bind their numbers.

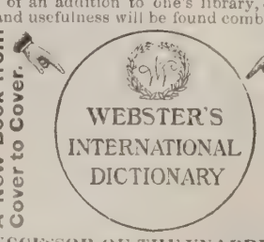
Our advertisements are set up in an attractive form, sure to call the attention of the reader.

Anything that our readers want, or for which a demand is to be created, not wholly of a local nature, will pay to advertise with us.

We take only advertisements from legitimate houses of really meritorious goods, and give them all the editorial assistance they deserve; consequently our readers knowing this, have confidence in advertisements contained in our columns.

The fact that we have the best and largest houses in every branch of trade advertising with us, and that they always renew as their seasons arrive, proves beyond a doubt that they have found the AMERICAN ANALYST a good advertising medium. Why should not you?

IN THE SELECTION OF
A CHOICE GIFT
or of an addition to one's library, elegance and usefulness will be found combined in



SUCCESSOR OF THE UNABRIDGED.
Ten years revising. 100 editors employed.
Critical examination invited. Get the Best.
Sold by all Booksellers. Pamphlet free.
G. & C. MERRIAM & CO., Springfield, Mass.

"BILLET"
are
Carefully Selected
French Sardines,
Packed in Choicest Olive Oil.
AT ALL LEADING GROCERS.

GLENN'S
SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,
C. N. CRITTENTON,
115 FULTON STREET,
NEW YORK.

IF you wish to advertise anything anywhere at any time write to GEO. P. ROWELL & CO., No. 10 Spruce St., New York.

ARROWHEAD HOT SPRINGS,
CALIFORNIA.

I MOST respectfully invite physicians of the East to write to me for information concerning this famous Southern California resort. The hot mineral water mud baths, and climate are unequalled in America. Diseases of the throat, lungs, liver, stomach and kidneys, nervous and skin troubles and rheumatism, are the ailments successfully treated. The hotel contains 125 rooms, is first-class, and lighted throughout with incandescent lights. Elevation 2,000 feet. Address,

H. C. ROYER, M. D.,
Arrowhead Springs, San Bernardino Co., California.

The Family Herald,
ISSUED EVERY MONTH,
A CLEAN AND INTERESTING STORY PAPER,
FOR OLD AND YOUNG.
Single Copies, 5c. Twelve Months, 50c.

ADVERTISING RATES.

One page—4 Columns—48 inches,	$40 00
Half page—2 Columns—24 inches,	25 00
One column—12 inches,	15 00
Half column—6 inches,	9 00
One quarter column—3 inches,	5 00
One eighth column—1½ inches,	3 00

THE FAMILY HERALD,
124-132 CANAL STREET, CINCINNATI, OHIO.

"*Printers' Ink*," that great authority on advertising, says, "A well-made advertisement placed in a humorous paper is like a well-made hat. It wears well." "Results are often obtained after your advertisement has been discontinued for months. A humorous paper never dies. It is read and re-read by all the members of a family, and visitors find pleasure in perusing its columns."

WHY NOT
—OWN AN ILLUSTRATED NEWSPAPER—
TO ADVERTISE YOUR BUSINESS?

Did you know it could be done at moderate cost? Particulars and samples of humorous papers free to any responsible firm. PICTORIAL WEEKLIES CO.,
28 West 23d Street, New York.

Mr. Gibbs, of the National Cash Register Co., says since publishing their own paper "The Hustler," their business has increased 300 per cent.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 49. NEW YORK, THURSDAY, DECEMBER 3, 1891. WHOLE No. 249

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - $1.00 per year.
Single Copies, - - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.
Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.
Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,
H. LASSING, M. D., } Editors.
T. P. McELRATH, }
No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

Artificial Coffee 579
Balloons 581
Bright Stories.
The King's Sweetheart 580
Chinese Market Gardens 584
Columbian Exposition 582
Domestic Dietetics 581
Dreams and Sleep 578
Editorials 577
Ahead of Bellamy; Why not Woman Chefs? Enlightened Enterprise.
Ferments and Anti-Ferments 578
Making Rain 583
Malaria 583

AHEAD OF BELLAMY.

It is a significant token of the amazing progress of this generation that writers on scientific subjects are indulging in speculations as to what the future will bring forth to a hitherto unexampled extent. Many of these imaginative flights are fanciful, and intentionally so, but it should be borne in mind that the wildest of them are scarcely as far beyond our credence as some of the familiar scientific facts of to-day would have been to our predecessors of two generations ago. In the November *Arena* Camille Flammarion discusses, as an ultimately possible achievement, the notion of establishing communication between this planet and Mars. His theory on the subject is interesting, but the method of realizing it is suspiciously suggestive of the machinery of Locke's famous "Moon Hoax," which appeared in the *Sun* about half a century ago. The latest vision of the possible future of man is that of the famous romancer, Jules Verne, who has been speculating with pen and ink as to what will be the daily life of people 1,000 years hence. As Science extends her dominions it is noticeable how increasingly ambitious such forecasts become. Nothing will satisfy M. Verne but aerial trains travelling at the rate of 625 miles an hour, a transatlantic tubular service conveying the traveller from London to New York in 295 minutes, a "telephote" which enables friends in different hemispheres to dine with each other, or at least to see and converse with each other while eating—accumulators for condensing and radiating at will the sun's rays. Such are the advantages to be enjoyed by the inhabitants of a certain city, called "Universal City," the capital of the United States in the year of grace 2891. England by that time will, according to M. Verne, have become a province of the United States. The public will be kept informed of the latest political developments, not only upon the terrestrial globe, but upon Jupiter, Mars, and Venus; not that they will read newspapers. The newspapers of the day will be spoken. Brilliant descriptive writers will be retained to speak through the telephone to millions of subscribers, and daily instalments of novels, to be con inued to-morrow morning, will be given by popular authors. Man is to be fed on the choicest viands, laid on as New River water is at present, and it will be sufficient to step into a toilet cabinet to be tubbed, shaved, dressed and brushed in the space of two minutes. Even a new digestive apparatus, "warranted for two years," will be obtainable. But one thing we, or rather our posterity, are told not to expect—they must not expect to live forever. A certain Dr. Faithburn's experiment in freezing his own body, and causing himself to be kept for 100 years, turns out a complete failure, so obstinately does he refuse to be resuscitated.

WHY NOT WOMAN CHEFS?

One of the most surprising things about the advancement of women in the present century is that women fail to advance on certain lines on which they might be expected to. Cookery is one of these, and the fact seems to justify the assertion, so often made by gastronomers, that no woman was ever a great cook. Certainly, none is recalled who can be fairly called a famous cook. It is well worth while to consider the reason for this. The tremendous progress of the sex in so many unexpected directions within a generation renders it doubtful, to say the least, that it is because she is not capable of success. If women can equal men in the higher walks of art and science, and in many branches of literature, why can they not equal men in the kitchen? The obvious reply is that they can, but such a reply only changes the form of the question, which remains, "Then, why don't they?" To be a really great chef, one must be a scholar, an artist, a philosopher, a chemist, a physician, and a thoughtful person, and must, moreover, have at least a spark of that indefinable quality which, for lack of a better name, we call genius. But in no one of these particulars have women fallen short. It is rarely, to be sure, that a combination of all the required qualities is to be found in a woman, but so is it rarely to be found in a man. Some subtle thinkers have gone a step beyond these considerations, and have declared that the difference of sex itself is really at the bottom of the question. They say that a great cook must be thoroughly in love with his art; that women are naturally less inclined to the pleasures of the table than men are; and that consequently they cannot feel the same enthusiasm in the kitchen which men feel—not all men, to be sure, but the elect. Possibly this is the true solution. Another one suggests itself, however, which is worth considering. A vague association of ideas, ill-founded in fact, it may be, has often retarded the progress of the world, and it is not unreasonable to suggest that such an association may have deterred many women from choosing a career in which they might have excelled; for, it must be remembered, it is only a woman of the higher order who could ever excel in this line. Kitchen work, for ages, has been done, usually, by menials. This has been because the world has for ages under-rated the importance of it. Only the few have appreciated it correctly. In consequence, out of sixty millions of people, probably less than ten thousand realize the true dignity of a good cook's work. Out of that ten thousand, nine-tenths are deterred from choosing cookery for a profession by the views of people generally. Why should they devote talents that would win distinction in another pursuit, to one which is generally regarded as undignified? Well, there are two reasons why. In the first place, the general impression is a wrong one, and ought to be removed for the good of mankind; and, secondly, the emoluments are very large. An educated woman of good position is likely to think that she would lose caste by taking charge of a kitchen for pay, and perhaps she would, but so did the first woman physician lose caste. The world needs cooks more than it does physicians. Supposing women should ponder this question.

ENLIGHTENED ENTERPRISE.

We have read with interest an account published in *Electricity* of the Thomson Scientific Club of Lynn, Mass. This club, organized a year or so ago at the suggestion of Prof. Elihu Thomson, of the Thomson-Houston Company, primarily in the interests of the employes at the factory at Lynn, has already caused its influence to be felt throughout the country. The original idea, we believe, was the enlightenment and education to a higher plane, of those more immediately connected with the interests of the firm, and to this end lecturers of high repute have been invited each season to discuss, in a popular way, electrical and general scientific subjects of common interest. Prof. Thomson himself set the pace in a most admirable

READ PAGE 586.

lecture on "What is Electricity," in which he brought the information down to the latest date, illustrating in a simple and effective way the phenomena first described by Hertz, and describing many more of his own discovery. This lecture was printed in pamphlet form, and constitutes to-day the best popular exposition extant of the new direction taken in electrical research. The good that has been done could not be limited to the few for whom it was primarily intended, but has been extended to a far wider circle. So successful were the first efforts, that a new course of lectures has been announced for the coming winter, the subjects and the names of the lecturers announced guarantee that the high standard adopted in the beginning, will be maintained in the future. This interest of employer in the education of his subordinates is one of the benign results of very recent civilization. Aside from its philanthropic aspect, it is no less important from a business point of view. Experience has shown that intelligence, even in the humblest employe, has a distinct money value, and in proportion to his elevation, so will he do more and better work.

FERMENTS AND ANTI-FERMENTS.

SOME OF THE PHENOMENA OF ORGANIC LIFE.

It is one of the great discoveries of the present generation of scientists that the organic world is replete with microbes, and that all organic changes, such as growth, ripening, disease, death, and decay are the results of microbic action, partaking of the same or a similar character as the action of yeast upon wort or fermenting beer. Admitting this theory, either entirely or partly, the question naturally arises, what, then, is a microbe? And here we find ourselves in a quagmire of doubt and difficulty. If organic life is conducted by microbes, then it would not be very hazardous to suppose that organic life consists of microbes, nor should we be far wrong in the supposition if the name microbe—*micros*, small, *bios*, life—is to be accepted in its literal signification. One big life might be made up of a multitude of small life, as the jelly fish (medusa) with all its delicate tracery, colors and form, is made up of myriads of seminate jelly bodies. It is not difficult to understand that a human being, or a tree with its leaves and fruit, might be made up of microbes. If each cell of the yeast plant is a microbe, then the explanation is simple enough, and we answer the question what is a microbe? by the cell theory; and that at once would declare that, as organic life is made up of cells, it is necessarily or more probably made up of microbes. Scientific chemists have dropped the term microbe for an attempted classification into bacteria, bacilli, mycoderma, and others; but this will not screen them from the argument of logic, that if microbes are cells, and organic life is made up of cells, it follows as a matter of course that organic life is made up of microbes—is microbes in fact—which differ from each other in the formation of different tissues. Scientific chemists would laugh such a theory to scorn—but until they are able to supply one that is more rational it will be well to reserve their scorn, and open their minds to thoughtful consideration. Suppose for a time we also drop the term microbes as being too general, and take on to something more specific. What shall it be—bacilli, or mycoderms, or simple ferments, as some microbes are called? What do you make out of bacilli? The bacilli that produces abscesses are described as thread-like existences, partaking of the character of long cells. The mycoderms of mould are described in a somewhat similar manner—all being or consisting of cells—that is cell walls with some sort of contents or no contents at all. The wood of a tree, the tender shoots, the fruit with its ripening juice, the flesh, skin, and bone of man, and all other organic matter is made up of cells; so too are ferments; so too are bacilli, and mycoderms, and the bacteria, as they are called—and so too are all organic substances of any kind whatever. This has never been disputed, but philosophers have been very slow to recognize the relation that organic microbes bear to general organic existence. The chemist deals with acids and minerals, which he calls inorganic; these differing from organic substances in that they are not vitalized—that is they have no actual life. Sulphuric acid is poured upon chalk or marble, and a general activity takes place, causing effervescence, and whilst carbonic acid gas is given off, a new combination (sulphate of lime) takes place. Yeast is added to sweet wort, and carbonic acid gas is given off, and new products are evolved. Surely there is a peculiar resemblance between these two processes, which are, according to the chemist, totally dissimilar—one being organic and the other inorganic. Why—and how so? The growth of the yeast during fermentation is one indication, but the yeast grows from an act that is purely mechanical. It absorbs a portion of the sugar, and the rest becomes alcohol and carbonic acid gas. Sulphuric acid also absorbs some portion of the lime, and carbonic acid is given off, and other products are evolved. The chemist endeavors to show that there is a broad distinction between the organic and the inorganic actions; but he has signally failed to elucidate the distinction, did any exist. The organic act is merely one of taking up food and converting it to its own tissue; the organic acts of eating and digesting food, as carried on in animal life are purely chemical, and strictly in accordance with the laws of inorganic chemistry. In other words, attempts have been made to divide chemistry into organic and inorganic kinds, but the distinction is too subtle to be deciphered, and has therefore no right to exist. To this division may be traced many of the errors that chemists are making in the present day. They attempt to draw a hard-and-fast line and fail miserably, laying meshes for their own feet into which they are certain to blunder through ignorance. It has been supposed that chemistry of the present day is greatly in advance of that of half a century back. In many cases this is so, and would be in many more if young chemists were not taught the errors of their forefathers as though they were axioms or ascertained truth; and these errors they have accepted, and allowed to form the foundation or basis of all their future researches. They start, therefore, upon wrong premises; how can they be expected to arrive at just conclusions? When Pasteur startled the world with his microbic theories, chemists regarded this as a revolution in their art, and lauded Pasteur to the skies. What had Pasteur discovered beyond what existed before? He did not invent; and yet, strange to say, he has been regarded as an inventor. Microbes, or what he calls microbes, existed from the beginning of the world; ferments existed also. Pasteur and others experimented with microbes of a kind—or what they called microbes. The secret of fermentation was unravelled—it was caused by a ferment feeding. What has that to do with microbes unless ferments are to be called microbes? Yes, ferments should be called microbes, and then we shall understand that microbic action depends entirely upon the action of what is called, most erratically, inorganic chemistry. The same person could be made to believe that microbic cells, such as ferments, are able to bite out what chemical constituent they require from sugar for their food. Certainly not, the action is purely inorganic. That the ferment grows and develops is undoubtedly an organic function. But this organic function of growth and development depends entirely upon the inorganic elements contained in the ferment, and their affinity for others of the medium in which the ferment is found. Granting all this, the next question that arises is, why does the change that takes place cause the ferment to grow? And here we enter upon another phase of the subject that adds to our perplexities, although it admits of an explanation. There is a very peculiar chemical process known as osmosis, which is an exceedingly bad word for it. The notion is that animal membranes are full of holes so small that the highest power of a microscope can hardly detect them; through these holes, under certain conditions, liquid flows. Suppose we take a fresh bladder and fill it half full of brine, and plunge that into a vessel of slightly colored water, and weight it so that it must keep down under the water. In course of time the bladder will fill almost to bursting with the colored water, because, says the chemist, the brine in the bladder was of greater density, or higher specific gravity. Does that explain the reason of the change? Why should the fluid of a lesser density pass through an animal membrane to a fluid of higher density? Surely we must appeal to the force called molecular attraction, which would naturally render the attractive power of a condensed liquid stronger in proportion to its comparative density over a less dense and therefore less attractive fluid. The denser contents of the cell, therefore, would account for its filling; but why it should burst, or divide into numerous cells as it grows, is one of the mysteries of organic life that it is beyond the power of the chemist, or greatest philosopher living, to explain. Nevertheless it happens, and is sufficient evidence of the possession of a vital energy that does not exist in it after death. It is one of the great secrets of Life and Cretion; it is one of the bars drawn across the inquisitive paths of man.—*Mineral Water Trade Review, London.*

DREAMS AND SLEEP.

A SUSPENSION OF NERVOUS ACTIVITY.

Why do we sleep? What is the nature of sleep and dreams? These are questions which have excited the attention of philosophers in all ages—Aristotle at their head—without resulting in any satisfactory solution of the riddle involved in them. In recent years, investigations in the domain of physiology and psychology have thrown some light upon the subject of that condition of men and animals which we characterize as sleep; and scientific observation has, to some extent at least, cleared up the problem of dreams. There is now no doubt that what we characterize as sleep is nothing more than a suspension of the activity of the higher nerve-centres; but until recently, considerable divergence of opinion has existed as to whether, and to what extent, the somnolent state was conditioned by the flow or cessation of flow of blood to the brain. The old physiologists, and among them the famous Albrecht von Haller, taught that during sleep the blood vessels were surcharged with blood, and that sleep was induced by their pressure on the brain, a view that has still advocates, and that appears to derive a measure of support from the facts that a full stomach or a state of intoxication induces sleep. Others, and among these the no less distinguished Blumenbach, supported the exactly opposite opinion, viz., that sleep was induced by a cessation of the flow of blood to the brain, a view which was also supported by a number of facts, as, for instance, the fact that sleep is induced by loss of blood or artificial pressure upon the veins of the neck. The part played by oxygen in human and animal bodies, has a still more important bearing on the phenomena of waking and sleeping. It is now generally known that all the activities of life are maintained by a process of slow combustion. Further, it follows of course that this combustion in the organs in activity, is attended by the formation of dross and waste substances, which if they were not got rid of in some way would accumulate in the system and create considerable disturbance. Recent investigation has determined that this waste substance, this by-product of physical and mental and emotional activity, plays a very important part in relation to the changes from wakefulness to weariness and sleep—they clog the machinery of the organism. Johannes Ranke was the first to draw attention to the fact that muscular weariness is induced by the accumulation of

substances generated by muscular contraction, and especially of lactic acid. If this "tiring substance" is injected into a muscle, it deprives it of working capacity, which can only be restored by artificial washing or by giving the circulation time to perform the task. All the known conditions agree with this theory of Ranke who goes on to explain that the "tiring substance" in consequence of its innate affinity for oxygen draws it from the muscles, and thus prejudices their capacity for the performance of their active functions. There is, then, a chemical derangement of the condition of the muscles; a transitory poisoning; and some learned men have ascribed the process of respiration to the same cause. As regards this last point, Rosenthal was the first to draw attention to the fact that the succession of respiratory movements is regulated by the measure of oxygen and carbonic acid in the blood. When the blood is saturated with oxygen the activity of the nervous apparatus of breathing is temporarily contracted, but the tissues quickly take up the excess of oxygen, which they replace by carbonic acid, and the so altered blood stimulating the nervous ganglia which set the respiratory muscles in activity, induces fresh respiratory action. But while Ranke's view found general acceptance among scientific thinkers, an entirely new light was thrown on the phenomena of weariness and sleep, by the discovery in the system, by A. Gautier, of the so-called leucomaine, an alkaloid which both in its chemical constitution and in other respects, bears a great resemblance to the products of decomposition of bacteria, the ptomaines and poisonous alkaloids. According to Gautier and Errera, this substance by its chemical affinity for oxygen deoxydizes the nervous centres and thus brings about that condition of weariness which induces sleep. Further observation, moreover, points to the conclusion that this leucomaine has also a direct narcotic action on the brain, and that it induces sleep by a species of intoxication. According to Gautier it is the lecuomaine in the brain itself which contracts its working capacity, and renders a strong stimulant necessary to the maintenance of a condition of wakefulness. Our movements become slower, thought languishes until at length a moment is reached at which our dulled perceptions fail to stimulate the brain to action, and we sleep. As a rule the influence of the tiring substance on the brain is confined to those organs or cells in which it is present, and this explains the phenomena of partial sleep. Deep sleep, says Exner, is reached by imperceptible gradations from the waking stage, By watching the approach of sleep it will be found that the circle within which ideas range grows narrower and narrower. It may be concluded that certain groups of ideas remain awake after others are sunk in sleep. On the approach of death, which has been characterized as the twin sister of sleep, organ after organ ceases its activity in a prescribed order, that portion of the brain which is the seat of the highest spiritual activities dying first, and that which is the seat of lower (automatic) mental activities following later. And it is precisely so in sleep, the organs of the highest mental activity are the first to succumb. In this fact we find the explanation of somnambulism which, as the celebrated physiologist Johannes Muller has explained, is partial sleep. If we consider the possibility, that certain of the higher nerve centres which have their activity suspended on the approach of sleep, gradually pass out of this state singly or in groups and renew their activity, there is little difficulty in understanding the diversity of dreams, their want of connectedness, and even the terrible nightmare whereby, in spite of all efforts we are unable to move a limb, and have the sensation of being paralyzed. The explanation of this latter condition is that the motor nerves are still asleep while some of the nerves of thought are awake and active. The reverse of this is the case in somnambulism. Here the higher mental organs are asleep while the motor nerves are awake and capable of being set into activity by automatic nerve centres. It may be remarked as worth remembering that the generation of the waste substances herein mentioned is almost suspended during sleep.—*Dr. Moritz Alsberg.*

ARTIFICIAL COFFEE.

A FOREIGN FRAUD ADOPTED IN AMERICA.

In the last issue of the AMERICAN ANALYST was a brief editorial comment upon the traffic in fraudulent coffee. The manufacture of artificial coffee beans has, it appears, assumed some importance in this country, and we learn from the *Scientific American* that specimens of the spurious beans have been sent to Kew, England, by Dr. Brown Goode, the secretary of the Smithsonian Institution. The idea of preparing artificial coffee beans for the purpose of mixing with the genuine beans is, however, not entirely new. As long ago as 1860 coffee beans, made from finely powdered chiccory, were sent to the Kew Museums. The American beans are supposed to be composed of rye flour, glucose, and water, they are made to resemble, in size and color, a moderately good sample of roasted coffee beans, and, by the introduction of a few genuine beans, are made to possess the aroma of coffee. In the specimens we have seen the modeling is sufficiently good to deceive the ordinary public, but if the product is at all critically examined it is noticed that the groove on the flat surface is broad and shallow, and that it does not extend into the heart of the bean by a long narrow slit as in the real article, and also, that there is no trace of the silvery skin at the mouth of the slit. The introduction of spurious coffee beans as an article of commerce in the United States is described in the following article from the New York *World*: "The average bulk of the genuine coffee imported into the United States is 8,000,000 bags, or 180,000,000 pounds, per annum. Experts estimate that fully twenty per cent. of the coffee sold to consumers is bogus, which raises the consumption to 216,000,000 pounds. Taking thirty cents per pound as the average retail price, the people of America pay $65,000,000 every year for this one article of food, of which $13,000,000 is paid for roasted and ground beans, pease, rye, or a manufactured article in no way resembling the Brazillian berry. To this must be added the production and sale of what are called 'coffee substitutes.' So extensive is this business that it is quite safe to say that consumers pay $12,000,000 for what they believe to be cheap coffee. This raises the total expenditure to $77,000,000, and it represents a sale of 276,000,000 pounds, for the 'substitute coffee' usually sells at twenty cents per pound. It will thus be seen that 96,000,000 pounds of bogus coffee are sold in the United States every year, and some estimates place it at 120,000,000 pounds. Taking the lowest figures, $25,000,000 are received for substances which can be profitably placed on the market at six cents a pound. The manufacturers, therefore, receive $6,000,000 for their goods, while retailers gain a profit of $18,000,000. There are two kinds of bogus coffee, an imitation bean and the ground article. The bean is the most difficult to produce, and it is only recently that actual success in this direction has been attained. The bogus bean must not only look like the genuine berry when raw, but it should be capable of taking a proper color when roasted. A very good specimen is now manufactured in Philadelphia and Trenton, being composed of rye flour, glucose and water. The soft paste is then moulded and carefully dried. To the eye of an expert the presence of this imitation is easy of detection and it cannot be used to any great extent among wholesalers. But when coffee goes to the retailer, adulteration begins. Sometimes the retailer is deceived, but nine times out of ten he is the one who introduces adulteration. The ground article is very easily produced in the proper color, and an aroma is infused by using strong decoctions of coffee essence. When mixed with real coffee even the expert eye and tongue may be deceived, while to the ordinary consumer it seems to be the genuine product. Bogus coffee beans have only a slight resemblance to the natural berry, for though they possess the proper form, the cicatrice on the inner surface is too smooth. Then again the gray color of the raw bean is not quite up to the mark, but when these manufactured beans are roasted with five per cent. of genuine coffee they find a ready sale. These bogus beans can be made at a cost of $30 per 1,000 pounds, and when mixed with fifty pounds of pure coffee the whole 1,050 pounds cost $37.50, or 3¾ cents per pound, so that a profit of nearly 100 per cent. is the result. There are any number of 'coffee substitutes,' the Hillis variety being the most successful. This company is already manufacturing 10,000 pounds per week, it being sold by the barrel to the retailers in nearly all of the New England, Middle and Western States. The profits of this concern are supposed to be $300 per day, and its operations have reached such a scale that the stockholders were recently offered nearly $1,000,000 for their secret and business, but it was declined. No one accustomed to coffee drinking would imagine that a decoction of this stuff was like either Mocha or Rio, but when mixed with four times its bulk of genuine coffee only an expert could detect the imposition. The manufactures of these 'coffee substitutes' claim that they are not violating the law of adulteration of food products, because they do not sell their goods as coffee, but simply as a substitute. While this may be true, it does not apply to the retailer, who mixes the bogus stuff with good coffee, and sells the whole as the genuine article. Though manufacturers may be beyond the penalties of the adulteration law, they should be suppressed, for without them coffee adulteration by retailers would be impossible. When it is remembered the American people are compelled to pay $25,000,000 for ingredients that can be manufactured for one-fifth the sum received by coffee growers, the necessity for the suppression of this nefarious trade is apparent. Oleomargarine cannot be sold as butter, neither should 'coffee substitute' be made to masquerade under the name of Java, Mocha or Rio." The production of artificial coffee has also received some attention in Germany, where an imperial decree has been issued forbidding the manufacture and sale of the machines for producing the artificial beans, which certain German newspapers have recently advertised. These artificial German beans are not intended in themselves as a beverage, but are to be used in trade for mixing with the genuine article.

WORKED BOTH WAYS.—Mind-cure doctor—"Make up your mind there is no pain, and there is none. Five dollars, please." Patient (moving towards the door)—"Make up your mind there is no payin', and there is none. Good morning."—*Yankee Blade.*

NOTICE TO DRUGGISTS.—Membership in the American Pharmaceutical Association is obtained only by election at the annual meeting. "Every pharmacist and druggist of good moral and professional standing, whether in business on his own account, retired from business, or employed by another, and those teachers of pharmacy, chemistry and botany who may be especially interested in pharmacy and materia medica" are eligible for membership. For blank application and further information, address Dr. H. M. Whelpley, 2729 Washington Avenue, St. Louis, Mo., Chairman of the Committee on Membership.

FROGS AS FOOD.—Most people believe, says a daily contemporary, that the edible frog is the only eatable batrachian in Europe, and that we have not developed the taste for those creatures for the simple reason that they are rare in this country, being confined to certain localities in the Eastern Counties. This is, however, not the case. The common frog—*Rana temporaria*—is eaten on the Continent in much greater numbers than *Rana esculata;* it is just as good, and easier to catch, as well as more abundant. Something might be done in recommending this creature as food; it is common enough not to want preserving. The two frogs are so much alike that it needs a careful examination to distinguish them. In this connection we may mention that we have more than once seen frog meat on the menus of London restaurants, and remember on one occasion to have quite enjoyed frogs' legs à la poulette at Gatti's well-known Strand restaurant. The dish ate like very delicate chicken.

BRIGHT STORIES.

THE KING'S SWEETHEART.

By Conan Doyle.

To Sherlock Holmes she is always the woman. It was not that he felt any emotion akin to love for Irene Adler. All emotions, and that one particularly, were abhorrent to his cold, precise, but admirably balanced mind.

I had seen little of Holmes lately. My marriage had drifted us away from each other.

One night—it was on the 20th of March, 1888—I was returning from a journey to a patient (for I had now returned to civil practice), when my way led me through Baker Street. As I passed the well-remembered door, which must always be associated in my mind with my wooing, and with the dark incidents of the study in scarlet, I was seized with a keen desire to see Holmes again.

I rang the bell, and was shown up to the chamber which had formerly been in part my own.

His manner was not effusive. It seldom was; but he was glad, I think, to see me.

"Wedlock suits you," he remarked. "I think, Watson, that you have put on seven and one-half pounds since I saw you."

"Seven," I answered.

"I see it; I deduce it. How do I know that you have been getting yourself very wet lately, and that you have a most clumsy and careless servant girl?"

I could not help laughing at the ease with which he explained his process of deduction.

"By the way," he said, "since you are interested in these little problems, and since you are good enough to chronicle one or two of my trifling experiences, you may be interested in this."

He threw over a sheet of thick, pink-tinted note-paper which had been lying open upon the table. "It came by the last post," said he. "Read it aloud."

The note was undated and without either signature or address.

"There will call upon you to-night, at 7.45 o'clock," it said, "a gentleman who desires to consult you upon a matter of the very deepest moment. Your recent services to one of the royal houses of Europe have shown that you are one who may be safely trusted with matters which are of an importance which can hardly be exaggerated. This account of you we have from all quarters received. Be in your chamber, then, at that hour, and do not take it amiss if your visitor wears a mask."

"This is indeed a mystery," I remarked. "What do you imagine that it means?"

As I spoke there was the sharp sound of horses' hoofs and grating wheels against the curb, followed by a sharp pull at the bell. Holmes whistled.

"A pair, by the sound," said he. "Yes," he continued, glancing out of the window, "a nice little brougham and a pair of beauties. A hundred and fifty guineas a piece. There's money in this case, Watson, if there is nothing else."

"A slow and heavy step, which had been heard upon the stairs and in the passage, paused immediately outside the door. Then there was a loud and authoritative tap.

"Come in," said Holmes.

A man entered who could hardly have been less than six feet six inches in height, with the limbs and chest of a Hercules.

He carried a broad-brimmed hat in his hand, while he wore across the upper part of his face, extending down the cheek bones, a black vizard mask, which he had apparently adjusted that very moment, for his hand was still raised to it as he entered.

"You had my note?" he asked, with a deep, harsh voice and a strongly marked German accent.

"Pray, take a seat," said Holmes. "This is my friend and colleague, Dr. Watson, who is occasionally good enough to help me in my cases. Whom have I the honor to address?"

"You may address me as Count Von Kramm, a Bohemian nobleman. I understand that this gentleman, your friend, is a man of honor and discretion, whom I may trust with a matter of the most extreme importance. If not, I should much prefer to communicate with you alone."

"You may say before this gentleman anything which you may see to me."

"Then I must begin," said he, "by binding you both to absolute secrecy for two years; at the end of that time the matter will be of no importance. To speak plainly, the matter implicates the great house of Ormstein, hereditary Kings of Bohemia."

"I was also aware of that," murmured Holmes, settling himself down in his arm-chair and closing his eyes. "If your Majesty would condescend to state your case," he remarked, "I should be better able to advise you."

The man sprang from his chair and paced up and down the room in uncontrollable agitation. Then, with a gesture of desperation, he tore the mask from his face and hurled it to the ground.

"You are right," he cried; "I am the King. Why should I attempt to conceal it? I have come incognito from Prague for the purpose of consulting you."

"Then, pray consult," said Holmes, shutting his eyes once more.

"The facts are briefly these: Some five years ago, during a lengthy visit to Warsaw, I made the aquaintance of the well-known adventuress, Irene Adler. The name is, no doubt, familiar to you."

"Kindly look her up in my index, doctor," murmured Holmes, without opening his eyes For many years he had adopted a system of docketing all paragraphs concerning men and things, so that it was difficult to name a subject or person on which he could not at once furnish information.

In this case I found her biography sandwiched in between that of a Hebrew rabbi and that of a staff commander who had written a monograph upon the deep-sea fishes.

"Let me see?" said Holmes. "Hum! Born in New Jersey in the year 1858. Contralto—hum! La Saala, hum! Prima donna Imperial Opera of Warsaw—Yes! Retired from operatic stage—he! Living in London—quite so! Your Majesty, as I understand, became entangled with this young person, wrote her some compromising letters, and is now desirous of getting those letters back."

"Precisely so. But how——"

"Was there a secret marriage?"

"None."

"No legal papers or certificates?"

"None."

"Then I fail to follow your Majesty. If this young person should produce her letters, for blackmailing or other purposes, how is she to prove their authenticity?"

"There is the writing."

"Pooh, pooh! Forgery!"

"My private note-paper?"

"Stolen."

"My own seal."

"Imitated."

"My photograph."

"Bought."

"We are both in the photograph."

"Oh, dear! That is very bad! Your Majesty has indeed committed an indiscretion."

"I was mad—insane."

"You have compromised yourself seriously."

"I was only Crown Prince then. I was young. I am but thirty now, and I am about to be married."

"So I had heard."

"To Clotilde Lothman von Saxe-Meningen, second daughter of the King of Scandinavia. You may know the strict principles of her family. She is herself the very soul of delicacy. A shadow of doubt as to my conduct would bring the matter to an end."

"And Irene Adler?"

"Threatens to send them the photograph, and she will do it. I know that she will do it. You do not know her, but she has a soul of steel. She has the face of the most beautiful of women, and the mind of the most resolute of men. Rather than I should marry another woman, there are no lengths to which she would not go—none."

"And Mademoiselle's address?" he asked.

"Is Briony Lodge, Serpentine Avenue, St. John's Wood."

Holmes took a note of it. "One other question," said he. "Was the photograph a cabinet?"

"It was."

At 3 o'clock precisely I was at Baker Street, but Holmes had not yet returned. I sat down before the fire, however, with the intention of awaiting him, however long he might be.

It was close upon 4 before the door opened, and a drunken-looking groom, ill kempt and side-whiskered, with an inflamed face and disreputable clothes, walked in the room. Accustomed as I was to my friend's amazing powers in the use of disguises, I had to look three times before I was certain it was indeed he.

With a nod he vanished into the bedroom, whence he emerged in five minutes tweed-suited and respectable as of old. Putting his hand into his pockets, he stretched out his legs in front of the fire and laughed heartily for some minutes.

"I left the house a little after 8 o'clock this morning," he said, "in the character of a groom out of work. I soon found Briony Lodge.

'I lent the ostlers a hand in rubbing down their horses."

"And what of Irene Adler?" I asked.

"Oh, she has turned all the men's heads down in that part. Has only one male visitor, but a good deal of him. He is dark, handsome and dashing. Never calls less than once a day, and often twice. He is a Mr. Godfrey Norton, of the inner temple. This Godfrey Norton was evidently an important factor in the matter. He was a lawyer.

I was balancing the matter in my mind when a handsome cab drove up to Briony Lodge, and a gentleman sprang out. He was a remarkably handsome man—dark, aquiline, and mustached—evidently the man of whom I had heard. He appeared to be in a great hurry, shouted to the cabman to wait, and brushed past the maid who opened the door with the air of a man who was thoroughly at home.

"He was in the house about half an hour, and I could catch a glimpses of him in the windows of the sitting-room, pacing up and down, talking excitedly, and waving his arms.

"Of her I could see nothing. Presently he emerged, looking even more hurried than before. As he stepped up to the cab he pulled a gold watch from his pocket and looked at it earnestly.

"'Drive like the devil!' he shouted, 'first to Gross & Hankey's, in Regent Street, and then to the Church of St. Monica, in the Edgeware road. Half a guinea if you do it in 20 minutes!

"Away they went, and I was just wondering whether I should not do well to follow them, when up the lane came a neat little landau, the coachman with his coat only half buttoned, and his tie under his ear, while all the tags of his harness were sticking out of his buckles.

"It hadn't pulled up before she shot out of the hall door and into it. I only caught a glimpse of her at the moment, but she was a lovely woman, with a face that a man might die for.

"'The Church of St. Monica,' John,' she cried, 'and half a sovereign if you reach it in 20 minutes.'

(*Concluded next week.*)

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

December.

MEATS.—Beef, mutton, pork, venison, veal.

POULTRY AND GAME.—Chickens, fowls, duck, geese, turkeys, grouse, capons, hare, partridge, pheasants, rabbits, pea-fowl, guinea-fowl, snipe, widgeon, wild ducks, woodcock.

FISH.—Brill, carp, cod, crabs, perch, salmon, smelts, soles, sprats, tench, turbot, whiting, halibut, sturgeon, oysters.

PRACTICAL RECIPES.

ROYAL SOUP.—Have ready a quart of clear soup. Beat two eggs with a spoon until they are well mingled, then add to them a quarter of a cup of milk and a pinch of salt. Butter a cup, pour the mixture into it, set the cup in a pan of water and bake until the egg is firm, then set it away until it is cold. Cut it up into even size bits, put them in the tureen, pour the stock boiling hot over them and serve.

BUCKWHEAT CAKES.—Put four cupfuls of buckwheat into a crock or pan and add to it half a cup of cornmeal and a teaspoonful of salt, pour in half a cup of yeast and sufficient lukewarm water to make a batter. Set to rise over night. In the morning add a tablespoonful of molasses to make them brown nicely and if too thick thin the batter with tepid water. Try the cakes and if needed add more salt.

VENISON STEAK.—Cut your steak an inch thick but no more. Put a good tablespoonful of butter in a frying pan and when it just begins to turn brown put the steak in, cover the pan while cooking and turn the steak frequently, adding salt and pepper as it cooks. Turn on a hot platter and serve very hot.

MASHED TURNIPS.—Put some firm, good white turnips that have been peeled and quartered, in cold water, and let them come to the boil, then drop them into cold water, drain and put them in enough boiling water to cover them—this takes away the rank taste—cook until they are tender enough to be rubbed through a fine sieve, return them to the fire and add three teaspoonfuls of flour, a large tablespoonful of butter, two tablespoonfuls of cream or rich milk, salt and pepper. Beat up light, let it get very hot, then dish and serve.

OYSTER OMELET.— Put a teaspoonful of flour smooth in half a teacup of cold water, then add a cup of oyster liquor, a tablespoonful of butter, half a teaspoon of salt and a pinch of pepper. Beat this mixture over the fire until it thickens, then set back where it will keep warm and add a dozen small oysters. Beat up four eggs with a tablespoonful of cream and a little salt. Pour this onto a pan containing a tablespoonful of hot oil or butter and cook until set, then pour the oyster mixture into the centre, fold over and slip onto a hot platter.

BOILED APPLE PUDDING.—Line a pudding dish with good paste. Pare, core and slice some fine apples and fill up the dish with them, sprinkling sugar, cinnamon and bits of butter among them. Put on a top crust wet and press the edges together, tie a floured cloth about the dish and cook in a pot of boiling water.

SWEET POTATO PIE.— Take four cupfuls of dry sweet potato boiled and worked through a sieve, and add to it one quart milk, four eggs, salt, nutmeg, and cinnamon, and sugar. Line a pie plate with good paste, fill with the mixture and bake without upper crust.

BALLOONS.

THEIR INCREASING USE IN MILITARY OPERATIONS.

The first flying machine we have any record of was invented by Archytas, of Tarent, a friend of Plato, in the fourth century B. C., and was in the form of a dove; but nothing further appears to have been achieved in this direction until 1768 when Besnier invented a flying machine which worked with a measure of success. Since then there has been an unbroken series of efforts to utilize balloons in war, but without any very eminent success, until during the last Franco-German war, when the French balloons played an important part in the maintenance of communications. During the four months of the siege of Paris the beleagured city sent out seventy hydrogen-filled balloons with ninety passengers, three million letters, and four hundred carrier pigeons, and of these only five balloons fell into the hands of the Germans. These results gave encouragement to France and other nations to bestir themselves earnestly for the development of aërial navigation. But before noting what the several nations have achieved in this direction, it will be in place to say a few words on the application of balloons to war purposes; and first of all we must bear in mind the distinction between the three kinds of aërial machines—the balloon attached to the earth, the free, unsteerable balloon, and the free steerable balloon; and again between the use of balloons in the field and in fortresses. The only suitable balloon for an army in the field is the captive balloon, for its serviceability depends on its availability at the required moment. While the balloon train, and the various appliances for inflating it, must be light enough to prove no serious impediment on the march, at the same time it is necessary that it can be got ready for use at short notice. Moreover the basket must not oscillate too much to admit of steady observation. The balloon need not be large—just large enough to carry a man up to five hundred metres high; but this man must be both an experienced balloonist and capable of making rapid and accurate observations, consequently an officer. The fortress balloon may be larger, and the time occupied in filling is of less importance. Its purpose is the same, viz., that of reconnoitering. The balloon should not approach within three kilometers of the enemy, or it will sooner or later be riddled. It should be secured by a copper wire to admit of telegraphing the result of observations. If the beleaguering force has surrounded the fortress, it can send a free balloon with the wind, over it, and capture it by its cavalry on the other side. The free balloon has the great advantage over the captive balloon that it is more difficult to aim at. And now as to what arrangements the leading nations have made for the utilization of balloons in future wars. France has a separate aëronautic establishment. Every French army corps has its balloon-park, and at every great drill a captive balloon takes part. The arrangements for securing the stability of the basket have been so far perfected as to admit of photographs being taken from it. The balloon is filled with hydrogen generated in the field from a prepared plastic substance called gasëin, the discovery of Major Renard. Seven pounds of this substance yield a cubic meter of gas, and Major Renard has invented a machine capable of producing 400 centimeters an hour. The balloon is made of pongee silk, varnished, and the Nordenfeld method of filling is now under test. The staff is also trained in the management of free balloons. The French have also a naval balloon service, with captive balloons, provided with electric lights, by means of which they can expose the movements of the hostile fleet without disclosing their own locality. The French have undoubtedly made greater progress in this department than any other nation. The English balloons are made of gold-beater's skin, which combines strength with lightness and imperviousness, but costs twice as much as a silk balloon. The gas is produced at central depots, compressed, and conveyed in Nordenfeld steel cylinders, which follow the balloon on wagons. Any number can be emptied into the balloon at once, and the filling occupies only a quarter of an hour. There is an aëronautic institute at Chatham similar to the French institute at Chalais-Meudon. Experiments have also been made for introducing a system of signaling by means of electric lights. The English system affords the utmost economy in transport; and, on the whole, it must be conceded that ballooning in England is on a very practical basis. The Italians, in 1885, ordered a captive balloon train from Gabriel Yon in Paris; but the Italian officers who accompanied the English expedition to the Soudan and Bechuanaland having mastered the Nordenfeld system of filling, the government decided to adopt it, and a committee of Italian officers having been deputed to visit the Chatham aëronautic institute, secured balloon material from an English house —Howard, Lane & Co., of Birmingham. These balloons have a content of only 200 cubic meters, but they suffice for reconnoitering purposes. In Russia, too, the Nordenfeld system has been recently adopted, and an aëronautic staff has been organized at St. Petersburg. Under their former system the balloons took eight hours to fill, and the necessary material weighed twenty tons, requiring twenty four-horse teams for its conveyance. These figures indicate the enormous advance in ballooning made by the introduction of the Nordenfeld system. Free balloons were used by the Russians in the manœuvres of 1886. The German aëronautic service was organized in 1887. The gas is generated on the system of Dr. Wilhelm Majert, in Berlin, and First Lieutenant G. Richter, of Falkenberg; and the filling occupies two hours. August Riedinginger of Augsburg, is building a navigable balloon, which promises to compare favorably with Renard's. The Spanish have introduced the Yon system. The balloon is ten meters in diameter and the whole material weighs eight tons. Portugal, Holland and Belgium have adopted the Lachambre system, which is very light but not very durable. Austria appointed three officers, in 1888, to study the German and English systems. A military aëronautic course exists in the institute of the editor of the Vienna *Sportzeitung*, in which six officers have made from four to eight excursions. On the whole, the Austrians are disposed to wait developments. China ordered balloons from Yon, immediately after the conclusion of peace with France, and has experimented with very satisfactory results. The materials are Chinese silk, caoutchouc, Florentine taffeta, and varnish. The contents of the balloons range from 200 to 3,000 centimeters. The United States have adopted the Yon system; and among South American States who have done something in this direction we may enumerate the Argentine Republic, Paraguay, Brazil, Chili, and Peru. The Union army used balloons in the Civil War, and the Triple Alliance used them in the war against Paraguay, 1866–67.

A. HUEBER.

HARDENING TOOLS.—It is said that engravers in Germany harden their tools in sealing wax. The tool is heated to whiteness and plunged into the wax, withdrawn after an instant, and plunged in again, the process being repeated until the steel is too cold to enter the wax. The steel is said to become after this process almost as hard as the diamond, and when touched with a little oil of turpentine the tools are excellent for engraving and also for piercing the hardest metal.

ALPHABETS OF THE WORLD.—The Sandwich Islands alphabet has 12 letters; the Burmese 19; Italian 20; Bengalese 21; Hebrew, Syrian, Chaldee and Samaritan 22 each; French 23: Greek 24; Latin 25; German, Dutch and English 26 each; Spanish and Slavonic 27 each; Arabic 28; Persian and Coptic 32; Georgian 35; Armenian 38; Russian 41; Muscovite 43; Sanskrit and Japanese 50; Ethiopic and Tartarian have 202 each.

THE COLUMBIAN EXPOSITION.

PROGRESS OF THE WORK.

Among a great number of sketches submitted in competition for the Woman's Building by women from all over the land, the President of the Board of Lady Managers quickly discovered in the sketch submitted by Miss Sophia G. Hayden that harmony of grouping and gracefulness of details which indicate the architectural scholar, and to her was awarded the first prize of a thousand dollars, and also the execution of the design. Directly in front of the building the lagoon takes the form of a bay, about 400 feet in width.

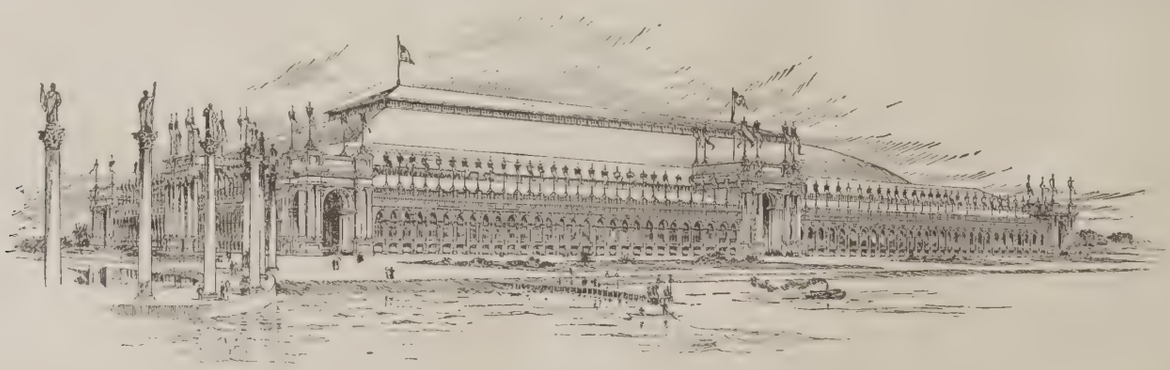


THE WOMEN'S BUILDING.

From the center of this bay a grand landing and staircase leads to a terrace six feet above the water. Crossing this terrace other staircases give access to the ground four feet above, on which, about 100 feet back, the building is situated. The first terrace is designed in artistic flower beds and low shrubs. The principal facade has an extreme length of 400 feet, the depth of the building being half this distance. Italian renaissance is the style selected. The first story is raised about ten feet from the ground line, and a wide staircase leads to the centre pavilion. This pavilion forming the main triple-arched entrance, with an open colonnade in the second story, is finished with a low pediment enriched with a highly elaborate bas-relief.

The corner pavilions have each an open colonnade added above the main cornice. Here are located the Hanging Gardens. A lobby 40 feet wide leads into the open rotunda, 70 x 65 feet, reaching through the height of the building, and protected by a richly ornamented sky-light. This rotunda is surrounded by a two-story open arcade, as delicate and chaste in design as the exterior, the whole having a thoroughly Italian court-yard effect, admitting abundance of light to all rooms facing this interior space. On the first floor are located, on the left hand, a model hospital ; on the right, a model kindergarten ; each occupying 80 x 60 feet. The whole floor of the south pavilion is devoted to the retrospective exhibit ; the one on the north to reform work and charity organization. Each of these floors is 80 x 200 feet. The curtain opposite the main front contains the Library, Bureau of Information, records, etc. In the second story are located ladies' parlors, committee-rooms and dressing-rooms, all leading to the open balcony in front. The whole second floor of the north pavilion incloses the great assembly-room and club-room. The first of these is provided with an elevated stage for the accommodation of speakers. The south pavilion contains the model kitchen, refreshment rooms, reception rooms, etc. The building is encased with "staff," the same material used on the rest of the buildings, and as it stands with its mellow, decorated walls bathed in the bright sunshine, the women of the country are justly proud of the result.

Notable for symmetrical proportions, the Manufactures and Liberal Arts Building is the mammoth structure of the Exposition. It measures 1,687 by 787 feet and covers nearly 31 acres, being the largest Exposition building ever constructed. Within the building a gallery 50 feet wide extends around all four sides, and projecting from this are 86 smaller galleries, 12 feet wide, from which visitors may survey the vast array of exhibits and the busy scene below. The galleries are approached upon the main floor by 30 great staircases, the flights of which are 12 feet wide each. "Columbia Avenue," 50 feet wide, extends through the mammoth building longitudinally and an avenue of like width crosses it at right angles at the centre. The main roof is of iron and glass and arches an area 385 by 1,400 feet and has its ridge 150 feet from the ground. The building, including its galleries, has about 40 acres of floor space. The Manufactures and LiberalArts Building is in the Corinthian style of architecture, and in point of being severely classic excels nearly all of the other edifices. The long array of columns and arches, which its fagades present, is relieved from monotony by very elaborate ornamentation. In this ornamentation female figures, symbolical of the various arts and sciences, play a conspicuous and very attractive part. The exterior of the building is covered with "staff," which is treated to represent marble. The huge fluted columns and the immense arches are apparently of this beautiful material. There are four great entrances, one in the centre of each fagade. These are designed in the manner of triumphal arches, the central archway of each being 40 feet wide and 80 feet high. Surmounting these portals is the great attic story ornamented with sculptured eagles 18 feet high, and on each side above the side arches are great panels with inscriptions, and the spandrils are filled with sculptured figures in bas-relief. At each corner of the main building are pavilions forming great arched entrances, which are designed in harmony with the great portals. The building occupies a most conspicuous place in the grounds. It faces the lake, with only lawns and promenades between. North of it is the United States Government Building, south the Harbor and in-jutting lagoon, and west the Electrical Building and the lagoon separating it from the great island, which in part is wooded and in part resplendent with acres of bright flowers of varied hues.



MANUFACTURES AND LIBERAL ARTS BUILDING FROM THE SOUTHEAST.

EXPOSITION NOTES.

One of the unique features of the Mexican exhibit at the Fair will be the celebrated Pandure family, consisting of five persons, who are probably the most expert workers in clay and modelers of figures in the world. This family will be sent to Chicago by the State of Guadalajara. It is the intention to provide a Mexican house for them to live in during the Fair, and a workshop where their work may be inspected.

Guatemala has opened World's Columbian Exposition headquarters with an enthusiasm which assures a splendid exhibit from that country. From Guatemala newspapers it is learned that fully 100 guests, including the members of the Cabinet and other prominent officials and citizens, assembled by invitation on Saturday evening, September 12. The rooms were handsomely decorated with pictures of the Exposition buildings, lithographs furnished by the Department of Publicity and Promotion, and engravings cut from illustrated papers of the United States. There was plenty of bunting, the flags of Guatemala and the United States being intertwined. Leon Rosenthal acted as master of ceremonies. Dr. F. De Leon, the Secretary of State, made the opening speech, in which he described the magnitude and importance of the Exposition, and the advantages that could be derived from it by the Government and people of Guatemala. Dr. Guzman, the Chairman of the Board of Commissioners appointed by the Government of Guatemala to represent that republic at Chicago, responded in an appropriate manner. Lieutenant Scriven reports that the display from that country will certainly surpass expectation.

MAKING RAIN.

A SKEPTICAL VIEW OF THE IDEA.

The recently prevalent notion that rain can be produced at any time and in any place by the simple agency of atmospheric concussion is discussed in the *North American Review*, by Professor Simon Newcomb, LL.D. The following is a synopsis of his opinions on the subject: To the uncritical observer, the possible achievements of invention and discovery seem boundless. If we say that for every actual discovery there are a thousand visionary projects we are told that, after all, any given project may be the one out of the thousand. In a certain way these hopeful anticipations are justified. We cannot set any limit either to the discovery of new laws of nature or to the ingenious combination of devices to attain results which now look impossible. The science of to-day suggests a boundless field of possibilities. Such being the case, I am not going to maintain that we can never make it rain. But I do maintain two propositions. If we are going to make it rain, or produce any other result hitherto unattainable, we must employ adequate means. And if any proposed means or agency is already familiar to science, we may be able to decide beforehand whether it is adequate. Let us grant that out of a thousand seemingly visionary projects one is really sound. Must we try the entire thousand to find the one? By no means. The chances are that nine hundred of them will involve no agency that is not already fully understood, and may, therefore, be set aside without even being tried. To this class belongs the project of producing rain by sound. As I write, the daily journals are announcing the brilliant success of experiments in this direction; yet I unhesitatingly maintain that sound cannot make rain, and propose to adduce all necessary proof of my thesis. Clouds consist of impalpable particles of liquid water floating or suspended in the air. But we all know that clouds do not always fall as rain. In order that rain may fall the impalpable particles of water which form the cloud must collect into sensible drops large enough to fall to the earth. Two steps are, therefore, necessary to the formation of rain: the transparent aqueous vapor in the air must be condensed into clouds, and the material of the clouds must agglomerate into raindrops. No physical fact is better established than that, under the conditions which prevail in the atmosphere, the aqueous vapor of the air cannot be condensed into clouds except by cooling. It is true that in our laboratories it can be condensed by compression. But, for reasons which I cannot explain, condensation by compression cannot take place in the air. A current of cold air meeting a current of warm, moist air in its course may condense a considerable portion of the moisture into clouds and rain, and this condensation will go on as long as the currents continue to meet. In a hot spring day a mass of air which has been warmed by the sun, and moistened by evaporation near the surface of the earth, may rise up and cool by expansion to near the freezing point. The resulting condensation of the moisture may then produce a shower or thunder-squall. But the formation of clouds in a clear sky without motion of the air or change in the temperature of the vapor is simply impossible. Sound is one of the commonest and simplest agencies in the world for changing the state of things in the air. It is purely mechanical in its action. When a bomb explodes, a certain quantity of gas, say five or six cubic yards, is suddenly produced. It pushes aside and compresses the surrounding air in all directions, and the motion and compression are transmitted from one portion of the air to another. The amount of the motion diminishes as the square of the distance; a simple calculation shows that at a quarter of a mile from the point of explosion it would not be one-ten-thousandth of an inch. The condensation is only momentary; it may last the hundredth or the thousandth of a second, according to the suddenness and violence of the explosion; then elasticity restores the air to its original condition, and everything is just as it was before the explosion. A thousand detonations can produce no more effect upon the air, or upon the watery vapor in it, than a thousand rebounds of a small boy's rubber ball would produce upon a stone wall. So far as the compression of the air could produce even a momentary effect, it would be to prevent rather than to cause condensation of its vapor, because it is productive of heat, which produces evaporation, not condensation. The popular notion that sound may produce rain is founded principally upon the supposed fact that great battles have been followed by heavy rains. This notion, I believe, is not confirmed by statistics; but whether it is or not, we can say with confidence that it was not the sound of the cannon that produced the rain. The reader can try a very simple experiment, which ought to be conclusive. If he will explode a grain of dynamite, the concussion within a foot of the point of explosion will be greater than that which can be produced by the most powerful bomb at a distance of a quarter of a mile. In fact, if the latter can condense vapor a quarter of a mile away, then anybody can condense vapor in a room by slapping his hands. Let us, therefore, try slapping our hands, and see how long we must continue before a cloud begins to form. What we have just said applies principally to the condensation of invisible vapor. It may be asked whether, if clouds are already formed, something may not be done to accelerate their condensation into raindrops large enough to fall to the ground. This also may be the subject of experiment. Let us stand in the steam escaping from a kettle and slap our hands. We shall see whether the steam condenses into drops. It must, however, be added that the laws under which the impalpable particles of water in clouds agglomerate into drops of rain are not yet understood, and that opinions differ on this subject. Experiments to decide the question are needed, and it is to be hoped the Weather Bureau will undertake them. For anything we know to the contrary, the agglomeration may be facilitated by smoke in the air. If it be really true that rains have been produced by great battles, we may say with confidence that they were produced by the smoke from burning powder rising into the clouds and forming nuclei for the agglomeration into drops, and not by the mere explosion. How, it may be asked, shall we deal with the fact that Mr. Dyrenforth's recent explosions of bombs under a clear sky in Texas were followed in a few hours, or a day or two, by rains in a region where rain was almost unknown? But what went on during the hours that elapsed between the sound of the last bomb and the falling of the first drop of rain? Did the aqueous vapor already in the surrounding air slowly condense into clouds and raindrops in defiance of physical laws? If not, the hours must have been occupied by the passage of a mass of thousands of cubic miles of warm, moist air, coming from some other region to which the sound could not have extended. Or was Jupiter Pluvius awakened by the sound after two thousand years of slumber, and did the laws of nature become silent at his command? Investigators are generally quiet, unimpressive men, rather diffident, and wholly wanting in the art of interesting the public in their work. It is safe to say that neither Lavoisier, Galvini, Ohm, Regnault, nor Maxwell could have gotten the smallest appropriation through Congress to help make discoveries which are now the pride of our century. They all dealt in facts and conclusions quite devoid of that grandeur which renders so captivating the project of attacking the rains in their aërial stronghold with dynamite bombs.

Subscriptions $1 per year. Now is the time to subscribe.

MALARIA.

THE DISEASE ATTRIBUTED TO MICROSCOPIC PARASITES.

The Washington *Star* thinks some day a method of inoculation for the prevention of malaria may be devised. Science has got hold of the germ recently, and identified it beyond question. It is not a bacillus or any kind of bacterium, as has been imagined, but an animal parasite. The name given to it is plasmodium malariæ. It belongs to the lowest grade of animal life, being a "protozoon." This little parasite, which is of microscopic dimensions, appears to make its home ordinarily in the soil. It is plentiful in swamps, but wherever virgin ground is turned up for the first time the plasmodium is apt to be very numerously present. It has been noticed in towns that when much digging and turning over of earth has been going on, malaria exhibits a tendency to prevail. There has been a good deal of digging in Washington lately. Entering the human body through the lungs, the plasmodium seeks a roosting place in one of the red corpuscles of the blood. These corpuscles are in shape flat round disks, bearing a curious resemblance under the microscope to pieces of money. How essential their well-being is to health everybody knows. The parasite having taken up its residence in one of the corpuscles, proceeds to multiply, forming a little colony. The colony feeds upon the material of the corpuscle, which thus becomes disorganized and is finally destroyed, so that the hostile germs are set afloat in the blood. At the beginning they were merely bits of protoplasmic jelly, without any particular shape, but now they become free swimmers and have developed long hair-like oars to paddle about with. Each one has three such oars radiating from its body Thus they make their way through the veins and arteries, following the tide of the circulation. Of course, it is not possible that this sort of thing should go on to any considerable extent without seriously affecting the health of the individual. The latter is attacked by chills, alternating with fever. Quinine and other remedies destructive to the parasites relieve these symptoms. However, if the patient continues to be exposed to the absorption of the germs in a malarious region, medicines will cease to have effect. The blood, invaded by hordes of plasmodia, becomes filled with disorganized red corpuscles, and nature gives up the fight, death ensuing. Now that medical science knows precisely what it has to contend against in the treatment of this hitherto mysterious disease, it may be able to find more effective remedies. Already the discovery has enabled physicians to correctly diagnose many malarial cases which have a way of counterfeiting typhoid fever and other trouble. In such instances the presence of the plasmodia in the blood, readily ascertained by the microscope, settles the question. Besides, if one must suffer, it is a great comfort to know what is gobbling one up.

WATERING THE DECEASED.—If an Arab women who has lost her husband decides to marry again, she visits the grave of her husband the night before her second marriage, and prays him not to be offended. As, however, she feels that he will be offended, she takes with her a donkey laden with two goatskins filled with water. The prayer ended, she proceeds to pour the water on the grave, to keep the first husband cool under the circumstances, about to take place, and, having well saturated him, departs.

WOMEN'S HATS.—The French hairdressers are circulating a petition which they will submit to the minister of fine arts when it has 500,000 signatures. The purport of the document is that women be prohibited from appearing in their hats in the theatres subsidized by the Government, and that the coiffure of the ladies at such entertainments be according to the fashion devised by the Hairdressers' Association. The cause of this strange bequest is that the trade in false hair has greatly decreased for the last few years, and the present style fashion of dressing the hair in Grecian style threatens still greater in falling off in the trade.

A CHINESE MARKET GARDEN.

LONG ISLAND FARMING FOR CHINESE CONSUMPTION.

If you should go up to Chinatown almost any day now your attention would be attracted by the Chinese vegetable peddlers. Some have stands on the street, and others occupy the stoops and hallways of the Chinese tenement houses. If you are a very early bird, and get around about 7 in the morning, you will see several wagons, loaded with vegetables, and drawn by scrawny horses, come up Mott Street. The drivers are ordinary white men, but seated beside them are Chinamen. There is one Chinaman in each wagon. The arrival of these wagons is the signal for the vegetable peddlers to come down and buy. Each wagon is surrounded by them. They peer into the bags and barrels, and examine the vegetables critically. The driver sits holding the reins, while the Chinaman by his side attends to the business, exhibiting attractive specimens and rapidly figuring up the prices of vegetables selected by the peddlers. The Chinaman on the wagon has a healtheir appearance than his brethern on the sidewalk and his face is more sun-burned and yet clearer in color than theirs. The vegetables that he has for sale are odd things and the American farmer would be puzzled to find names for them. They seem to be something like the native vegetables and yet they are different. The Chinese rarely use any other. The laundrymen from all parts of this city Brooklyn, and Jersey City may be seen buying at the stands and lugging off big bags full of vegetables. The biggest dealers ship quantities to other cities, especially to Boston, Philadelphia and Pittsburg. All are raised on American soil from Chinese seeds. Over in busy Steinway is a picturesque stretch of ground covering about three and a half acres. It can be seen from the horse cars as they turn down the main road to the horse railroad depot. From there it appears to be only a lofty bit of broken ground covered with little gardens here and there. Hedges of curious vines run along one side, and poles covered with vines stand out in spots like lonely sentinels. Four ramshackle, unpainted huts peer through the vines and bushes. They have thatched roofs and look as if they might be store houses for the products of the farm. Even in Goatville the huts do not look so wretched as these; yet there is picturesqueness about them which makes even the old settlers pause as they pass by. They are the houses of the owners and workmen on the Chinese farms. There are four farms, and each is independent of the others, but no one would know it unless he enquired. For twelve years this place has been worked by Chinamen, but the original farmers long since went back to their native land, probably rich enough to buy big farms and marry and raise families. The land belongs to a resident of Steinway named Conover, and he is said to get pretty good rents from his tenants. Each farm is worked by three Chinamen. The assistants are mostly young fellows. On the day when the reporter visited the farm several men were busy in the field digging up the late vegetables. It was raining, and they wore curious hats of plaited split bamboo, which were flat on top, circular, and about twenty inches wide. One of the Chinamen was piling up a lot of vegetables near the biggest hut. Although it was a cold day he wore only a light, loose Chinese costume, and his bare feet were stuck in heelless slippers. The master was away, he said; he had gone to Chinatown to sell some produce. He was only an assistant. He could speak English only very imperfectly, but he was extremely good-natured and very different from the distrustful, evasive Chinamen in Mott Street. He tried to explain to the reporter the names and purposes of the different vegetables. A monstrous green fuzzy melon, that looked like a watermelon covered with mouldy moss, was said to be a Chinese cucumber and was called wong-wa. Some greens that resembled discarded turnip tops were, said the Chinamen, gui-tui, and the rest of the same turnips were lou-bak. Chinese celery, or something identical in appearance with the American vegetable, was bak-tui. The spinach-like greens were hong-tui, and the Chinaman said they were used for salad. The most curious of all was a long, slender melon that looked like a thin cucumber covered with spikes. This was a lak-wa. Its seeds were cut up and boiled. The hedges which lined the road on the south end of the farm bore Chinese string beans. The men working in the field were quite as frank and pleasant as the first Chinaman, but they understood even less English, and were unable to comprehend any of the reporter's questions. The reporter was struck with the regularity of the rows of plants and the apparent fertility of the soil. Water pipes had been brought in, and several Chinamen were busy drawing water and carrying it in pails to various parts of the farms. On the upper edge of the last farm the reporter met Lou We, the owner. Lou We spoke very fair English, and said that he had been farming there for several years, but had not yet been able to make it pay, "All the seeds we use," he said "come from China. We don't grow your vegetables, because Chinamen don't know how to use them. Sometimes we have seeds left over that we can use, but if the winter is cold they spoil. This has been a bad season for us. It was too dry in June, July, and August, and too wet in September. Lots of our vegetables rotted before they were ripe. The biggest of the farms is Lee Wah's. He raises more than he can sell. We were all farmers in China, and we work here as we did there." The boys and rough young men in Steinway never bother the Chinese farmers. "Ye see, its this way," said a fellow lounging about a near-by saloon, "them Chinese ain't got no fun in 'em. Ye try ter fool with 'em and they get mad right away. Every one of 'em carries a gun or a knife, so th' boys give 'em the go-by. No Chinese in ours, if ye please."—*Sun.*

A Tonic

Horsford's Acid Phosphate.

A most excellent and agreeable tonic and appetizer. It nourishes and invigorates the tired brain and body, imparts renewed energy and vitality, and enlivens the functions.

Dr. EPHRAIM BATEMAN, Cedarville, N. J., says:

"I have used it for several years, not only in my practice, but in my own individual case, and consider it under all circumstances one of the best nerve tonics that we possess. For mental exhaustion or overwork it gives renewed strength and vigor to the entire system."

Descriptive pamphlet free.

Rumford Chemical Works, Providence, R. I.

Beware of Substitutes and Imitations.

CAUTION:—Be sure the word "Horsford's" is on the label. All others are spurious. Never sold in bulk.

How They Differ.

In make up: Most baking powders contain ammonia or alum. Cleveland's does not; not a particle.

It is made of pure cream of tartar and bi-carbonate of soda, with a little flour to keep the strength, nothing else. Cleveland's is wholesome.

In strength: A *rounded* spoonful of Cleveland's does better work than a *heaping* spoonful of any other.

A large saving on a year's bakings. Cleveland's leavens most.

In results: Cake made with Cleveland's is fine grained, keeps moist and fresh.

Cleveland's leavens best.

EVERY one in need of information on the subject of advertising will do well to obtain a copy of 'Book for Advertisers," 368 pages, price one dollar. Mailed, postage paid, on receipt of price. Contains a careful compilation from the American Newspaper Directory of all the best papers and class journals; gives the circulation rating of every one, and a good deal of information about rates and other matters pertaining to the business of advertising. Address

ROWELL'S ADVERTISING BUREAU,
10 Spruce St., New York.

Fine Table Wines

From our Celebrated Orleans Vineyard.

Arpad Haraszthy & Co.

Producers of the

ECLIPSE

CHAMPAGNE,

530 Washington St.

SAN FRANCISCO.

GROWERS OF

Chateau d'Orleans, the highest grade Claret made in America.

Cabernet Blend, the richest and finest of Table Clarets.

O V Chablis, possessed of all the delicate pungency of its French counterpart.

O V Sauterne, with the exact character and *Seve* of imported Santernes.

The **Chateau d'Orleans** and **O V Chablis** are sold in glass only.

PURE PEPSIN

In Powder and Scale.

MANUFACTURED BY

ARMOUR & COMPANY, Chicago.

Guaranteed free from adulteration or make-weights; of excellent physical properties and high digestive power.

Under similar conditions, **ARMOUR'S PEPSIN** will exhibit greater activity than any other pepsin now before the profession.

The Manufacturers will be pleased to supply members of the Medical Profession with samples of their Pepsin, and with full details regarding digestive strength, if desired.

PUBLICATIONS OF THE

ANALYST PUBLISHING CO.

THE AMERICAN ANALYST.
Weekly. Every Thursday. $1 per year.

THE ROOFER AND TINNER.
Monthly. 15th each month. $1 per year.

THE LEATHER MANUFACTURER.
Monthly. 1st each month. $3 per year.

Reliable agents and representatives wanted everywhere on liberal terms. Address

ANALYST PUBLISHING CO.
19 PARK PLACE, NEW YORK.

CONFEDERATE MONEY.

Warranted Genuine and in Good Condition.

We are extensive dealers in Confederate Money—rare relics of our late civil war; also Bullets, Cannon Balls, etc. We want agents in every city North to sell these mementoes, and we will pay agents handsomely to sell our goods. We will furnish the money to those desiring at the following retail prices: Shinplasters, 10, 25, 50 and 75 cents each, or the entire set 50 cents. Complete sets, consisting of $100, $50, $20, $10, $5, $2, $1, 50c., $1 per set. $500 bills, $2 50 each. $100 bills, 15 cents, or two for 25 cents. $50 bills, 10 cents, or two for 15 cents. $5 and $20, 5 cents each. 50c., $1 and $2, 25 cents each. Inquirers enclose stamp for reply.

Publishers of SOUTHERN AGENT, Atlanta, Ga.

FORTY DOLLARS FREE.

How many words can you make using only the letters in the words **"Hat Identifier?"** First prize, $25; second prize, $10; third prize, $5; fourth prize, one dozen "Identifiers." Send a DIME for rules governing contest and sample "Identifier" to ILLINOIS METAL CO., Royal Insurance Building, Chicago, Ill.



MAGEE'S EMULSION

No other proprietary medicine has the endorsement of Physicians to the same extent.

None is used in Hospital practice with so large a percentage of satisfactory results.

No other remedy has cured so many cases of

CONSUMPTION

and other Pulmonary Diseases.

SCROFULA

is entirely eradicated from the system by its use.

It is as easy to take as Maple Syrup or Honey, and can be retained by the most delicate stomachs without nausea.

IF YOU have a Cold, Cough, Bronchitis, Dyspepsia, or a generally run-down system, you can regain health and strength quickly by the use of

MAGEE'S EMULSION

Ask your Druggist for it, and take only that labeled

MAGEE EMULSION CO., Lawrence, Mass

"BILLET"

are

Carefully Selected

French Sardines,

Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,

HOWARD STREET, BOSTON, MASS.

HARTSHORN'S SELF-ACTING SHADE ROLLERS

NOTICE SCRIPT NAME OF Stewart Hartshorn ON LABEL, AND GET THE GENUINE HARTSHORN

25c. THE DAISY STAMPING OUTFIT. 25c.

STAMPING BY AN ENTIRELY NEW PROCESS. No more ironing or cleaning of patterns, no powder to use. Our Outfit has **OVER FIFTY NEW DESIGNS**—Children, Birds, Animals, Flowers, Leaves, Ferns and Mottoes in great variety; Borders in rich styles, and a complete Alphabet, together with a bottle of **STAMPING FLUID,** which makes an instantaneous impression, and is absolutely certain, cleanly and easy to use. Every lady can do her own stamping at home. **GREATEST BARGAIN EVER OFFERED.** No other outfit has this Patent Fluid. Designs **SUPERIOR** to many outfits sold for $1.00. We will sell this wonderful Outfit, for a short time only, at **25c. POSTPAID** to advertise our other goods. Send at once. We fill orders promptly. Address

EUREKA MANUFACTURING CO., Hinsdale, Ills.

LADY AGENTS WANTED.

I have a medical specialty for ladies use, which is one of the best selling articles in the country. You can make a good income handling it, and at the same time be doing your sex a great benefit. Write me at once for full information and exclusive territory. If you wish a sample sent enclose 12 cents postage. Dr. H. H. Jackson, 103 State Street, Chicago.

We can save you Fifty Dollars when you Build. See



A complete set of Plans to build from, simply state about price of dwelling desired. 25 cts. in stamps. Our book "Beautiful Homes." 25 cts. Our monthly book "The National Builder," 25 cts. Address

The National Builder, Adams Exp. Bldg., Chicago, Ill.

INSTRUCTIONS TO SUBSCRIBERS.

The **Names of all Subscribers** are registered as soon as received, and paper is always promptly forwarded.

Postage.—The postage to all parts of the United States and Canada is paid by the publisher.

Remittances of small sums may be made with comparative safety in ordinary letters. Sums of one dollar or more must be sent by registered letter or P. O. money order, otherwise we cannot be responsible for same. Silver must not be sent in a letter.

Postage Stamps will be received for the fractional part of a dollar, and in any amount when it is impossible for patrons to procure bills, but you must send one or two-cent stamps only.

SUBSCRIPTIONS.—The AMERICAN ANALYST will be sent one year to any subscriber for ONE DOLLAR. New subscriptions can begin at any time.

We Stop the Paper at the expiration of the time paid for unless a renewal of subscription is received. Those whose subscriptions have expired must not expect to continue to receive the paper unless they send the money to pay for it.

Change of Address.—Subscribers wishing their addresses changed must invariably give their former as well as new address.

Missing Numbers.—It occasionally happens that numbers of our paper sent to subscribers are lost or stolen in the mails. In case you do not receive any number when due, write us a postal card and we will cheerfully forward a duplicate of the missing number.

Most Important of All.—In every letter that you write us, never fail to give your full address, plainly written—name, post-office, County and State.

Address all letters to

THE ANALYST PUBLISHING CO.,
19 Park Place, New York.

GRANT.

SHERMAN.

SHERIDAN.

McCLELLAN.

GEN. GRANT'S MEMOIRS.

Original $7 Edition for 30 Cents.

NO book, excepting the Bible, has ever had such a sale in the United States as General Grant's Memoirs. 650,000 copies have already gone into the homes of the rich, but the subscription price of $7.00 has placed it beyond the reach of people in moderate circumstances. **If 650,000 people have been willing to pay $7.00 for Grant's Memoirs, there must be a couple of million people in the United States who want them, and will jump at the opportunity** to buy them at the low figure here offered.

We will send you General Grant's Memoirs, publisher's original edition, best paper, cloth, green and gold binding, hitherto sold by subscription at $7.00,

FOR 30 CENTS!—FOR 30 CENTS!—ABSOLUTELY ONLY 30 CENTS!

and absolutely a proposition such as has never been made in the history of book publishing. The two splendid volumes of Grant's Memoirs, of which 650,000 copies have been already sold—not a cheap edition, but the best—for 30 cents; provided you send your subscription of $1.00 to the **AMERICAN ANALYST** one year, and also a subscription of $3.00 for the **COSMOPOLITAN MAGAZINE,** the brightest and cheapest of the great illustrated monthlies, itself equal to the best $4.00 magazine.

The **COSMOPOLITAN** is enabled to make this offer because of **the purchase of 600,000 volumes at a price which even publishers would deem impossible, and with the idea of running up its circulation to half a million copies.** By contract with the **COSMOPOLITAN,** and at no profit to us, we are enabled to offer our readers a share in the low price obtained through the largest purchase of books ever made in the history of the world.

If, however, you have Grant's books, our offer will permit you to take instead,

GEN. SHERMAN'S MEMOIRS, 2 Vols., sold by subscription for $5.00
GEN. SHERIDAN'S MEMOIRS, 2 Vols., sold by subscription for 6.00
GEN. McCLELLAN'S MEMOIRS, sold by subscription for . . 3.75

All of these are bound in cloth, green and gold, in uniform style with Grant's Memoirs.

Send us at once $3.00 for year's subscription to the **COSMOPOLITAN,** $1.00 for year's subscription to the **AMERICAN ANALYST,** and 30 cents for a set of Memoirs—$4.30 in all—to which add postage on the particular set of Memoirs selected.

WHY DO WE MAKE THESE GRAND OFFERS?

Simply because we want every intelligent family to keep well informed as to the popular science of this progressive era. We publish the **only popular journal on this subject—THE AMERICAN ANALYST.** Its subscription list is already very large; but we want at least **Fifty Thousand additional subscribers before January 1, 1892.** We know that, if we shall get them, we shall be able to hold most of them as permanent readers of our periodical. So at present sacrifice and at great cost, we have entered into a combination. The **COSMOPOLITAN** is the brightest and cheapest of the great illustrated monthly magazines; it gives annually 1,536 pages by the ablest writers, and over 1,200 illustrations by the ablest artists; and is just as interesting to the young boy or girl as to the oldest grey head. Now, then, we ask you to send us merely $4.30, and, on receipt of same, we will mail them to you regularly for **one year,** and will also send you (making no charge for the books) a set of **GENERAL GRANT'S MEMOIRS,** or either of the other works that you may select. **NO SUCH OFFER AS THIS WAS EVER MADE BEFORE BY ANY PUBLISHER SINCE TIME BEGAN!**

UNLESS OTHERWISE DIRECTED,

we shall invariably ship the books by express, charges to be paid by the receiver. If you wish the volumes forwarded by mail, you must distinctly say so at the time when you send us your address and the Money; and you must also enclose postage to prepay the packages at the following rates: **GRANT'S MEMOIRS,** 96 ozs., 48c.; **SHERMAN'S MEMOIRS,** 92 ozs., 46c.; **SHERIDAN'S MEMOIRS,** 84 ozs., 42c.; **McCLELLAN'S MEMOIRS,** 48 ozs., 24c. The government rate for postage on books is one-half cent per ounce. The **COSMOPOLITAN** and **AMERICAN ANALYST** are sent to subscribers free of postage.

SEND ALL ORDERS ADDRESSED

THE ANALYST PUBLISHING CO.,

19 Park Place, New York.

TABASCO PEPPER SAUCE,

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced by connoisseurs to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY'S SON,

NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

NATRONA BI-CARBONATE OF SODA.

ABSOLUTELY PURE.)

The nature of the raw material from which NATRONA BI-CARBONATE OF SODA is made—viz., kryolith, a mineral containing *pure sodium*—insures a purity and uniformity of product which cannot be obtained from any other known material. In making BI-CARB. SODA from any other raw material, the use of sulphuric acid is a necessity, but none is used in any part of the process of making NATRONA BI-CARB.; hence its entire freedom from the slightest trace of arsenic, which is always present in ordinary soda. Its absolute purity and entire freedom from all traces of *sulphate of soda*, common salt and other impurities, render NATRONA BI-CARB. NEARLY TASTELESS, and being bolted through the finest bolting-cloth, insures the finest stage of division.

To these indisputable facts the attention of CONSUMERS of soda is specially called. They are IMPORTANT, and should influence both those who use and those who sell soda, to buy and sell NONE BUT THE BEST.

The NATRONA BI-CARB. Soda is kept in stock by almost every wholesale druggist and grocer throughout the United States, of whom it may be ordered.

Natrona Bi-Carb. Soda is unequaled by any other brand of English or American Manufacture.

PENNA. SALT MANUFACTURING CO.,

NATRONA CHEMICAL WORKS. PHILADELPHIA, PA.

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

ARROWHEAD HOT SPRINGS,

CALIFORNIA.

I MOST respectfully invite physicians of the East to write to me for information concerning this famous Southern California resort. The hot mineral water mud baths, and climate are unequalled in America. Diseases of the throat, lungs, liver, stomach and kidneys, nervous and skin troubles and rheumatism, are the ailments successfully treated. The hotel contains 125 rooms, is first-class, and lighted throughout with incandescent lights. Elevation 2,000 feet. Address,

H. C. ROYER, M. D.,
Arrowhead Springs, San Bernardino Co., California.

A COLLEGE EDUCATION FREE!

In one of the oldest, most prominent Colleges in the country, **ABSOLUTELY FREE.** A chance of a lifetime. Do you want it? You do not need to invest a dollar. Write for particulars to one of the brightest and most original illustrated monthlies in America. Address,

BUSINESS WORLD, DETROIT, MICH.

GOITRE, or THICK NECK.

I have a positive, speedy, cleanly, harmless and almost inexpensive cure. Come or write to me at 28 Arlington Court, CLEVELAND, Ohio. It is no iodine smear. Cure made permanent.

Dr. J. CASKEY.



RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,
184 Greenwich St., N. Y.

AMERICAN ANALYST CLUB RATES.

WE have made arrangements by which we can furnish to our readers any of the periodicals named below at a club rate, with the AMERICAN ANALYST, at a considerable saving. Should any periodical not mentioned be desired, or several of the journals, drop us a postal card and we will give you a rate promptly. For sample copies address the publishers. Terms strictly cash, in advance.

	Publishers' Price.	Our Price, including AMERICAN ANALYST. One Year.
Arthur's Home Magazine	$1.50	$2.35
Babyhood	2.00	2.50
Century Magazine	4.00	4.50
Christian Herald, N. Y.	1.50	2.00
Christian Union, N. Y.	3.00	3.50
Cosmopolitan Magazine (See our Premium Offer.)	3.00	3.25
Cottage Hearth	1.50	2.00
Current Literature	3.00	3.50
Demorest's Magazine	2.00	2.50
Family Story Paper	3.00	3.25
Farm and Fireside	.50	1.40
Fireside Companion	3.00	3.50
Forum	5.00	5.25
Frank Leslie's Illustrated Newspaper	4.00	4.50
" " Popular Monthly	3.00	3.50
Garden and Forest	4.00	4.25
Godey's Ladies' Book	2.00	2.50
Golden Days	3.00	3.50
Good Housekeeping	2.40	3.00
Harper's Bazaar	$4.00	$4.50
" Young People	2.00	2.50
" Weekly	4.00	4.25
" Magazine	4.00	4.25
Home Magazine (Mrs. Logan's)	.50	1.25
Judge	5.00	5.00
Ladies' Home Journal	1.00	1.75
Ledger, New York	2.00	2.50
Life	5.00	5.50
Lippincott's Magazine	3.00	3.25
Magazine of American History	5.00	5.00
New York Weekly	3.00	3.50
Our Day, Boston	2.50	3.25
Outing	3 00	3.50
Peterson's Magazine	2.00	2.50
Popular Science Monthly	5.00	5.25
Puck	5.00	5.00
Review of Reviews	2.00	2.75
Scientific American	3.00	3.50
Scribner's Magazine	3.00	3.25
Youth's Companion	1 85	2.50

ADDRESS THE ANALYST PUBLISHING CO., 19 Park Place, New York.

GOLD MEDAL, PARIS, 1878.



W. BAKER & Co.'s Breakfast Cocoa

from which the excess of oil has been removed,

Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

IF you wish to advertise anything anywhere at any time write to GEO. P. ROWELL & CO., No. 10 Spruce St., New York.

SWIFT'S

CHOICE

Chicago Dressed Beef

AND

MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,

UNION STOCK YARDS,

CHICAGO, ILLS.

THE ORIGINAL AND GENUINE (WORCESTERSHIRE SAUCE).



LEA & PERRINS' SAUCE

In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—

Lea & Perrins

Beware of Imitations; see that you get Lea & Perrins'

For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS, NEW YORK.

GLENN'S SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,

C. N. CRITTENTON,

115 FULTON STREET,

NEW YORK.

The Family Herald,

ISSUED EVERY MONTH,

A CLEAN AND INTERESTING STORY PAPER,

FOR OLD AND YOUNG.

Single Copies, 5c. Twelve Months, 50c.

ADVERTISING RATES.

One page—4 Columns—48 inches	$40 00
Half page—2 Columns—24 inches	25 00
One column—12 inches	15 00
Half column—6 inches	9 00
One quarter column—3 inches	5 00
One eighth column—1½ inches	3 00

THE FAMILY HERALD,

124-132 CANAL STREET, CINCINNATI, OHIO.

The Standard of Excellence.

KINGSFORD'S

OSWEGO

Pure and Silver Gloss



STARCH

KINGSFORD'S

OSWEGO CORN STARCH

FOR

Puddings, Custards, Blanc-Mange, Etc.

THE PERFECTION OF QUALITY.

WILL PLEASE YOU EVERY TIME.

Always ask your Grocer for these goods.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 50. NEW YORK, THURSDAY, DECEMBER 10, 1891. WHOLE No. 250

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - $1.00 per year.
Single Copies, - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.
Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.
Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,
H. LASSING, M. D., T. P. McELRATH, } Editors.
No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

Applied Hypnotism..... 590
Bright Stories.
The King's Sweetheart.—(*Concluded.*)..... 592
Domestic Dietetics..... 594
Editorials..... 589
Senator Paddock's Bill; A Delicate Machine; Feminine Pharmacists.
Electric Clock..... 595
Electrolysis..... 594
Free Lunch.—(Republished by request.)..... 590
Old Probabilities..... 593
Sulphur..... 591

SENATOR PADDOCK'S BILL.

The pure food question after many years of agitation is at length recognized as a matter of national significance. As the readers of the AMERICAN ANALYST have been informed, Senator Paddock, of Nebraska intends to introduce in the Senate again the bill to promote purity in food products, which was before the last Congress. The bill will be referred to the Senate Committee on Agriculture, and Senator Paddock hopes to get it considered and reported in season for early consideration by the Senate. If it can be got upon the House calendar at a reasonably early date, he hopes that it may be passed through both Houses before the long session is over. In the last Congress it was late in the session before it was reported in a form entirely satisfactory to the members of the Committee on Agriculture. Meantime the House had passed the Conger Lard bill, and even if the Senate in its closing hours had substituted the Pure Food bill for the Lard bill, the House would probably have refused to concur without more time to consider the subject than was available. The chief problem in the last Congress was the constitutional one, whether Congress could interfere with the manufacture of food products in the States. The same question was discussed by the House Committee on Agriculture in the Fiftieth Congress. Both Committees reached substantially the same principle of solving the problem, although the Committee of the Fiftieth Congress did not go so far in working out the details as Senator Paddock's Committee in the last Congress. The essential principle they agreed was that the Federal Government could properly regulate commerce in the Territories and between the States, and that the standard established for inter-State commerce would soon become the standard for consumers in the States by their own demand, if not by State legislation. There is no large branch of manufacture which is not carried on for the benefit of the people of several States as well as of one State. Few manufacturers would care to limit their sales strictly to their own State for the purpose of escaping a National Pure Food bill, and the mere fact that they did so would lay their products open to suspicion. Consumers, according to the reasoning of the Committee, would come to insist that everything they purchased should bear the Federal certificate of purity, whether it happened to be manufactured in their State or not. If it were necessary, State legislatures would probably follow the model of the Federal law and a substantially uniform system be extended over all the large manufacturing States of the North. Several States already have laws to secure purity in food products. The Massachusetts law, which has been in force for some years, was generally regarded as the best model. The Senate bill had one advantage over the Conger Lard bill which passed the House. It laid no tax on harmless compounds, but simply required that they should be branded for just what they were. The Conger Lard bill was cut off the same piece of cloth as the Oleomargarine bill, and was intended to cripple an industry by taxation. It imposed a tax upon compound lard, just as the Oleomargarine bill imposed a tax on oleomargarine, with the distinct object of raising the price of the compound and relieving the producers of hog lard and butter from the competition of the manufactured product.

FEMININE PHARMACISTS.

The idea of women serving as druggists is growing in popularity in Europe. Quite recently there was placed before the Prussian Reichstag a largely signed petition in favor of admitting women to this profession. The petitioners base their demand on historic right, and recall the fact that for centuries and until the middle of the eighteenth century the preparation of medicine was almost wholly in the hands of women; that women apothecaries, who were examined by learned physicians, were given the right to prepare and sell drugs, and many of them enjoyed a high reputation in the business. The petition also claims that about the middle of the eighteenth century narrow-minded jealousies of women arose, and a desire to drive them from all lucrative handiwork to make place for men resulted in their almost absolute exclusion from this calling. They argue that the profession of the druggist demands no great bodily exertion, nor any undue publicity which should render it difficult for women or unwomanly. It is as womanly a calling as that of a teacher or saleswoman. Physicians testify, according to this petition, that "women are far superior to men in the fulfillment of all sanitary duties, in punctual obedience to a physician's orders, in dexterity and deftness." The calling of a druggist demands certain scientific study and preparation, which women have certainly shown themselves able to master. The laws in this State require this study and preparation, besides service for a term of years in a drug store and a certificate from the State Board of Pharmacy. There is no prohibition in our laws against women in this calling. In Russia, Belgium and Holland women have passed pharmaceutical examinations and devoted themselves successfully to the profession. It is at least a more independent calling than that of a nurse, which demands, in nearly every case, a great deal of individual patience, besides bodily exertion. A nurse has as much responsibility in the administration of medicine as a druggist in the preparation of it. The calling of a druggist is, moreover, one which any woman of refinement might seek.

A DELICATE MACHINE.

Information comes through a Baltimore correspondent that Prof. Henry Rowland, of the Johns Hopkins University, has just completed a scientific machine for studying the spectrum and the movements of the fixed stars, which is so delicate and fine that it can rule 1,000,000 lines to the inch. The great feature of this piece of mechanism is the screw, upon which Prof. Rowland has spent years of work and study. It is made of steel and was cut in the workshop of the physical laboratory of the Johns Hopkins. Every precaution is taken to have this the most perfect of the division engines which Prof. Rowland has devised. It is so placed that its temperature is kept nearly the same all the time, an important consideration in ruling the fine lines. The professor says that its work was not satisfactory for nearly a year because the proper oil was not used. The machine is capable of ruling 1,000,000 lines to the inch with ease, but the eye could not detect them, as even with the strongest microscope only upward of 100,000 lines to the inch can be distinguished. The largest grating made, about five inches in diameter, contains about

READ PAGE 597.

110,000 lines. Such a grating takes six days and nights' constant ruling to make. Since June the professor and his assistant, Mr. Schneider, have been trying in vain to rule a perfect one for Prof. Helmholtz, the great German physicist. Prof. Rowland has been prosecuting this great work with money obtained from the Rumford fund of the American Academy of Arts and Sciences, and from the fund given by Miss Bruce to the Harvard Astronomical Observatory for promoting research in astronomical physics.

APPLIED HYPNOTISM.

ITS POSSIBLE UTILITY AS A CURATIVE AGENT.

Dr. C. L. Tuckey, in an article on the above subject in the London *Contemporary Review* for November, expresses some interesting views of which we give the following abstract: At the present time, when even medical experts hold themselves in an attitude of indecision towards hypnotism, it is not surprising that the laity are at a loss to reconcile the conflicting opinions of the advocates of the practice and its opponents. The consideration of a few salient points may guide thoughtful persons to a correct estimation of a subject which promises to assume great importance in the near future. There are two leading theories as to the nature of hypnosis, held by the two leading schools of hypnotism. That of the Salpetriere, enunciated by the eminent physician Charcot, is that hypnotism is pathological, and, in fact, a form of hysteria, and occurs in hysterical subjects only; while the Nancy school contends that hypnosis is a physiological condition analogous to natural sleep, and that nearly all persons of sane mind can be hypnotized. It is to be regretted that Charcot and his followers, by experimenting mainly on hysterical subjects—for the most part women—have forced us to regard their experiments as incomplete, and the arguments based upon them as futile. Prof. Bernheim recently experimented on sixty-nine patients in a general hospital under his charge, and succeeded in hypnotizing the whole of them. As agricultural laborers, sailors, soldiers and the majority of children are shown to be exceptionally susceptible to hypnotism, we must, if we except Charcot's doctrine, greatly enlarge our views as to the prevalence of hysteria. The fact is, there is an extreme type of hypnotism to which only some hysterical patients are subject; but Bernheim's definition covers a much wider field. "Hypnotism," he says, "is the induction of a psychical condition, in which the subject's susceptibility to suggestion and ability to act upon it are enormously increased." It matters not whether the degree of influence produced amounts to profound sleep or merely to a slight languor; if the suggestibility of the subject is increased it constitutes hypnosis. Suggestion as to the key to the hypnotic problem. By it the subject is put to sleep or calmed into a state of receptive quiescence, and by it he is guided in the way to cure. The degree of suggestibility is not necessarily proportioned to the depth of sleep. Suggestibility, apart from hypnotism, comes within the experience of us all. Every one has some portion of such susceptibility, and in many it is highly developed and may be worked upon for good or ill with signal effect. The drunkard, converted by a Gough or a Father Mathew, is redeemed through suggestion, and through it the victim of evil example or solicitation falls to his ruin. We are physically benefited by words of hope and cheerful surroundings, and prostrated by prognostications of evil. Those ills which the hypnotist can cure by suggestion he can also frequently produce by the same method. "Hypnotism," says Prof. Delbœuf, of Liege, "by cutting off the intellectual life from the life of relation enables the highest centres to assume cognizance of and to look after the working of the organic functions." Disease, according to Liebeault, implies an excess of nervous action in one direction and its deficiency in another. Through suggestion, hypnotism enables us to restore the nervous equilibrium on which depends the maintenance of health, and the hypnotist combats disease by utilizing the patient's own forces. "The patient," says Bernheim, "hypnotizes himself." So also he cures himself through forces that are essentially his own; the direction of them only comes from without. Hypnotism does not enable us to create energies, but only to develop and control those which already exist. It cannot impart wisdom to the fool nor soundness of brain to the idiot, though it will sometimes help us to develop weak faculties and call latent powers into activity. It is for this reason that hysterical persons are by no means satisfactory patients. If we cure such persons of a pain or a malady, they are very apt to conjure it back again or to develop another in its place by morbid auto-suggestion. As it is on the physical, so it is on the psychical side. So far from an individual of weak will being the best subject for the cure of a moral infirmity—of drunkenness for example—we find it more easy to reform one of a strong character, whose natural bent is toward the right, but who has been overcome by force of circumstances, such as evil association or mental depression. The theory that hypnotism, when used in the treatment of moral cases, subverts free will, is erroneous. The originally healthy and well-disposed subject who has sunk into habits of injurious self-indulgence through temptation from surroundings, exhaustion from overwork, anxiety or some other cause outside himself, has, for the time being, lost his freedom of will; while the victim of hereditary taint or congenital deficiency, who is naturally weak or vicious, or strong only in the direction of vice, may he said never to have possessed it. To the former, hypnotic suggestion may restore his lost willpower; in the latter the treatment may possibly develop it, especially if he is young. The question of applying hypnotism to children as a means of moral reformation is a very serious one. Many people say they would rather have their children naturally bad than hypnotically good; and I confess to feeling much sympathy with this sentiment if the badness is within normal limits. But if a child is viciously inclined, absolutely unmanageable or crossly stupid, I think hypnotic suggestion might fairly be tried to reinforce other moral treatment. Already great results have been achieved, but alas! the physician must sorrowfully confess that there are many cases of drunkenness and dipsomania for which there seems no permanent cure, either by hypnotism or any other form of treatment. Before moral as before physical disease, he must too often own himself vanquished and helpless. But in a large proportion of cases hypnotism offers a good hope of cure, and we should, I think, do wrong in refusing to give it a fair trial.

FREE LUNCH.

HOW THE SALOONS OF NEW YORK ARE PROVIDED.

AN EXTENSIVE INDUSTRY WITH WHICH FEW ARE ACQUAINTED.

(*Republished by request from the* AMERICAN ANALYST *of Nov.* 12.)

A reporter of the AMERICAN ANALYST passing recently through one of the thoroughfares on the extreme western edge of the up-town business section of the city had his attention attracted by the unloading of a wagon in front of a liquor saloon. A steady procession of wagons and carts was moving in both directions, and the contiguous supply of liquor saloons was only limited by the number of aldermanic aspirants who had selected that locality as a foothold for their ambitious purposes. There was nothing phenomenal, therefore, in the mere circumstance of a vehicle disgorging its contents into a saloon, but the character of the merchandise thus transferred was what excited the reporter's curiosity. The wagon was a boxed-up affair, similar in shape to the express wagons in which our city mails are transported. Folding-doors opening at the rear displayed to view an ingenious system of boxes containing sliding trays, and these latter, as they were carefully carried into the house, were seen to be filled with a variety of toothsome eatables. One in particular bore a mammoth oval platter, on which, on a snowy napkin, a magnificent salmon, adorned with flowers, was stretched at full length in naked glory, like a nymph reposing after her bath. Others contained dishes of tempting croquettes, boned turkey, patties, salads, crisp and cool, and sandwiches enough, apparently, to supply several barge-loads of famished Fresh Air excursionists. Sardines, olives, shrimps, and a variety of condiment, on appropriate dishes, were interspersed among the more substantial viands. Our reporter, using his professional privilege, entered the establishment and was jovially welcomed in a spick and span newly equipped bar-room by the proprietor, who, bareheaded and in his shirt-sleeves, was disposing the dishes as they were brought in upon a table running across the room. It was the opening day of a new saloon, and the tempting feast that was being laid for a "free lunch" for the benefit of the public. In the short conversation that ensued, the reporter, who, of course, was a teetotaller, and wholly unused to the ways of metropolitan bar-rooms, learned to his amazement that the very handsome layout was probably only a sample of many hundreds that had been provided that day by an establishment that makes a special business of furnishing free lunches for bar-room entertainment; and that apart from the linen and china, and a few other accessories of this special occasion, the repast before him comprised only a small portion of the daily product served to saloons throughout the city. The free lunch is essentially an American institution, like the bar-room to which it pertains. Its only transatlantic prototype at the present writing is, we believe, to be found in the taproom of the Mariners' Hotel in Liverpool, where, since May of the present year, a free-to-all spread has been provided by the proprietress, Miss E. Joyce, from 11 to 1 daily. In this country it is an almost universal adjunct of the bar-room business, and in several cities, notably San Francisco and New Orleans, the gratuitous lunch that is daily set forth to attract drinking customers constitutes a repast that in elegance of preparation and variety of viands would do credit to the dining-room of the wealthiest citizen. In New York the free lunch system, if conducted on a less elaborate scale, is equally generous in its provision for the hungry multitude. If you step into any bar-room on Manhattan Island during the noontide interval of rest from work, you will find a layout of eatables of some sort, from the never failing brown bread, salted pretzel, and dried herring of the beer saloon, to the soups, fish, cold meats, sandwiches and salads which an attentive waiter stands ready to dish out for you in liberal portions in the brilliantly appointed *cafes* that decorate the more fashionable and the commercial sections of the city. A very extensive business has grown up for furnishing public houses with these free luncheons. How extensive that is may be fairly conjectured from the fact that, excluding from the computation the 3,000 German beer shops where, as already stated, the desire for the foaming tonic—no longer entirely Teutonic—is stimulated by brown bread, sour, and seasoned with cardamum seeds, and by chunks of dried salt herring, there are fully 7,000 bar-rooms in New York, almost every one of which provides its customers with a free lunch daily. Excepting a few establishments connected with hotels of the higher grade, where meals are served in restaurants "on the European plan," the surplus of which graces the bar-room on the following day, these lunches are all prepared by outside caterers, who supply their patrons daily. There are about twenty concerns of

this kind in the city, a few of which find it necessary to use a horse and wagon to make their daily deliveries—the majority, however, sending their dishes to their customers in covered trays carried by hand. The largest free lunch purveyor in the city is the one which supplied the "opening" entertainment mentioned at the beginning of this article. It is the Knickerbocker Catering Company, an incorporated Company, of which William Fowler, Jr., is President; John L. Adams, Vice-President; and Captain William Fowler, Secretary. The latter is widely known as the former genial proprietor of the Knickerbocker Cottage, in Sixth Avenue, and to-day as the Grand Panjandrum, "little top button" and all, of more social and convivial organizations in this city than any other living man ever was affiliated with at one time. The Knickerbocker Company is an institution that deserves and well repays inspecting. It began business a few years ago on a small scale, in John Street, extending gradually into larger quarters successively in West Street and Carmine Street, until in the early summer of the present year its growth necessitated the renting of the commodious quarters it now occupies at 626 Washington Street, where a four story and basement building is wholly appropriated to its use. On the ground floor are two entrances from the street, one disclosing a handsomely appointed office, the other serving as a wagon way, into which the delivery wagons are backed to receive their daily loads. The rear apartment is a large and airy kitchen, where Mr. John L. Adams, Superintendent of the *chefs*, directs his force of assistants. Three huge ovens serve for baking everything excepting bread, that commodity being furnished exclusively by the regular bakeries. In a monster cauldron, large enough to serve the purposes of an army corps, beans are boiled by the barrelful, while in another vast pot potatoes are boiled on a similar wholesale scale. When the various articles are cooked they are apportioned out in neat vessels, pans, and dishes, and are placed in compartments, each kind by itself, on shelves which line the sides of the large apartment in front of the kitchen. Here daily, in the early morning, they are loaded into the wagons for distribution among over a thousand saloons. On the second floor is, in one corner, a vast ice-house and cooling room, the rest of the apartment being appropriated to sinks and troughs, where the returned dishes are washed, and pans are scoured by a number of female employes, who likewise pare the potatoes, pick the meat from the shells and claws of lobsters, and otherwise prepare the various viands for the kitchen. The third and fourth floors are utilized for storage purposes, excepting an apartment on the latter story, which serves as a dining-room for the manager and his clerks, the meals being sent up from the kitchen in a dumb waiter. Everything in the building is neat and orderly to the senses, and eatables and utensils alike are handled with the solicitude that one fondly trusts characterizes the culinary processes in his own domestic establishment. The extent of the free lunch system in New York can in some degree be estimated from the variety of comestibles provided by this one catering company. These comprise, daily, clam chowder, clam, vegetable, and tomato soup, beef pie, veal potpie, boiled ham, baked beans, served in eight different styles, besides the toothsome Boston method, boned turkey, macaroni, bean, potato, salmon, chicken and lobster salads, fried oysters, corned beef in glorious rounds or hashed, roast beef and turkeys, boiled pig's head, baked livers, liver and bacon, sweetbreads and calves' brains, soft crabs in season, fried eels, and, on Fridays particularly, fish in variety of kinds and diversity of styles. Add to these cooked meats a great assortment of condiments and "fixings"—olives, sliced beets, pickled tripe and pigs' feet, mixed pickles, etc.—and it will be conceded that the gratuitous appeasing of the noontide appetites of the thirsty but impecunious New Yorker is an enterprise of extensive proportions. Ten wagons are required to make the daily deliveries of the Knickerbocker Company, Each driver having received and reported to the manager on the previous day the orders of his several customers, backs in his wagon to the distributing counter in rear of the office, where, by skillful system, his already selected load is speedily shipped and checked off on the shipping clerk's blotter. The ordinary dishes are set in trays that, fitting together, are piled on one another—about fifty trays constituting a wagon load. The fish and specially prepared dishes are sent out in crates with hinged lids, inside of which the platters are held by cleats. About 6 o'clock each morning, excepting Sundays, these wagons set out on their tours of distribution, and towards noon they are back again, when the drivers make returns of the day's transactions, give in their books containing the orders for the following day, and turn over the cash received for what they had just been delivering. For this is a strictly cash business—each day's order being paid for on its delivery. The 7,000 New York saloons that provide free lunches to their patrons must pay out a goodly sum of money daily to these purveyors; but as the cost of the food is more than offset by the increased trade it attracts, the expenditure does not, as one might as first imagine, react upon their customers as a tax upon drinks, to be levied by an increased dilution with Croton water. Some idea of the cost may be gained from the orders filled by one of the ten wagons on the day our reporter visited the establishment. These, representing, of course, a number of saloons, comprised 12 gallons of clam chowder, 4 of clam soup, 1 of tomato soup, 1 boiled ham, 46 pans baked beans, 25 crocks Boston baked beans, 2 crocks macaroni, 5 dishes bean salad, 20 of potato salad, 16 of salmon salad, and 1 of lobster salad, 1 gallon sliced beets, 4 pigs' heads, 40 lbs. corned beef, one plate corned beef hash, 13 platters of fish and 6 of fish hash, 200 fish balls, 72 fish cakes, 2 rounds roast beef, 16 lbs. larded liver. The entire delivery of that wagon on that Friday amounted to $70.55 in value. There are some single saloons whose daily expenditure for free lunch foots up to more than half that amount. A well-known establishment on Park Row, above the bridge, consumes each day an average of 200 loaves of bread, 150 lbs. sausage, 30 lbs. corned beef, 20 lbs. roast beef, 50 lbs. Frankfort sausages, besides a variety of smaller items, at an aggregate expense of upwards of $40 for every noontide repast. The average cost, however, to well patronized saloons in business thoroughfares, where every other passer-by is not in search or in need of a free meal, may be put at from $6 to $12 per day. It is accordingly within reasonable limits to estimate the daily expenditure in New York for free lunches at $50,000; a statement that will at first stagger the reader's belief, but one that will, as the above figures indicate, challenge acceptance on investigation. Extend the computation to cover all the cities in the country, and the free lunch business will be found to represent an enormous annual expenditure.

SULPHUR.

ITS OCCURRENCE AND CHEMICAL CHARACTER.

One of the important elements used in the arts and in manufactures is sulphur. It is a comparatively abundant substance, wide-spread, and was known to the ancients by the name of brimstone. Being an active chemical element, it is found in numerous combinations with other elements, and also in the free state. Most of the free sulphur used in commerce comes from Sicily, but it is also found in Iceland, Mexico and South America in the free state, and always in the vicinity of volcanoes. When found in this state it is mixed with earth, from which it has to be separated. The separation is carried on by heat, which melts the sulphur, leaving the earth. The earth is first put into an iron pot and heated; the sulphur melts and is taken out and put into cold water, where it solidifies. The remaining earth contains a little sulphur, which is obtained by distillation. It is placed in earthern pots in a furnace and the sulphur melts. The pots are so arranged that they connect with other pots outside the furnace, which act as condensers, and into which the melted sulphur flows. There is an opening at the bottom of the condensers through which the sulphur flows out into the water, where it becomes solid. The sulphur is now in the rough or crude state, and must be purified. The process is carried on in a large brick furnace. The sulphur is put into an iron pot at some distance from the fire, where it melts and runs down through a pipe into another pot nearer the fire; here it boils and is vaporized. The vapor passes into a large brick chamber, upon the walls of which it condenses in the form of minute crystals. When in this state it is known as flowers of sulphur. Gradually the walls become hot and the sulphur melts, flowing down to the floor. At the bottom of the chamber there is an exit, through which the melted sulphur flows out into wooden moulds, in which it receives the form of a stick or roll. When sulphur is found in combination with other elements it is separated by different means. Considerable quantities of it are obtained in England from iron and copper pyrites. In this process a quantity of brush wood is spread upon the ground or upon a layer of broken pyrites. On this brush is placed about two thousand tons of ore, a space being left for a flue. The pile is fired by dropping lighted brands into the flue, and, as it burns, the sulphur melts and runs out, collecting in cavities. About twenty tons of sulphur are usually obtained from such a pile. Sulphur [S, II, IV, VI, $_{32}$] is a light yellow, solid, brittle substance with a vitreous lustre, and breaking with a concoidal fracture. It has a hardness of about 2½, is very inflammable, burning with a blue flame, and is insoluble in water. When rubbed with hair or wool it becomes negatively electrified, but is a bad conductor of electricity. It melts at 116 deg., forming an amber-colored liquid. If heated above 120 deg. the liquid turns dark and grows thick. As the temperature rises the liquid grows thicker and its color deepens, until at 200 deg.-250 deg. it is nearly black, and so thick that the dish containing it may be inverted and none of the paste will run out. Then it begins to grow thin as the heat increases, forming a brown gas at 440 deg., the boiling point. Sulphur may occur in three allotropic forms, which are distinguished by their crystalline forms and solubility in carbon bi-sulphide. The ordinary form is the rhombic, which may be got by evaporating carbon bi-sulphide in which sulphur is dissolved. The crystals are in the form of rhombic octahedrons, yellow and glassy. The second kind takes the form of oblique prismatic, slender, needle-like crystals, which are made by melting sulphur and allowing it to cool, so that a surface crust is formed. The crust is broken and the liquid beneath poured off, leaving transparent crystals. These are not permanent, but in a few hours grow dull and fall into minute rhombic forms. The third form is black sulphur, which is made by pouring liquid sulphur at about 280 deg. into cold water. A soft, gummy mass is formed, which may be drawn into strings. These grow darker as the temperature is raised. When left to themselves they change in a short time to the rhombic form, becoming yellow, opaque and brittle. Hence, the only permanent form is the rhombic. Sulphur combines with numerous other elements. With hydrogen it forms sulphretted hydrogen; with oxygen, sulphur dioxide and sulphuric anhydride; with carbon, carbon bi-sulphide. It is also found in minerals, where it forms sulphides and sulphates. In manufacturing it is used extensively in matches, gunpowder, sulphuric acid and other things.—*Popular Science News.*

Subscriptions $1 per year. Now is the time to subscribe.

BRIGHT STORIES.

THE KING'S SWEETHEART.

By Conan Doyle.

(*Concluded from page* 580.)

"This was quite too good to lose, Watson. I was just balancing whether I should run for it, or whether I should perch behind her landau, when a cab came through the streets. The driver looked twice at such a shabby fare, but I jumped in before he could object.

"'The Church of St. Monica,' said I, 'and half a sovereign if you reach it in 20 minutes.' It was 25 minutes to 12, and of course it was clear enough what was in the wind.

"My cabby drove fast. I don't think I ever drove faster, but the others were there before us. The cab and the landau, with their steaming horses, were in front of the door when I arrived. I paid the man and hurried into the church.

"There was not a soul there save the two whom I had followed and a surpliced clergyman, who seemed to be expostulating with them. They were all three standing in a knot in front of the altar. I lounged up the side aisle like any other idler who has dropped into a church.

"Suddenly, to my surprise, the three at the altar faced round to me, and Godfrey Norton came running as hard as he could towards me.

"'Thank God!' he cried. 'You'll do. 'Come! Come!'

"'What then?' I asked.

"Come, man, come; only three minutes or it won't be legal."

"I was half dragged up to the altar, and before I knew where I was I found myself mumbling responses which were whispered in my ear and vouching for things of which I knew nothing, and generally assisting in the secure tying up of Irene Adler, spinster, to Godfrey Norton, bachelor.

"It was all done in an instant, and there was the gentleman thanking me on the one side and the lady on the other, while the clergyman beamed on me in front. It was the most preposterous position in which I ever found myself in my life, and it was the thought of it that started me laughing just now.

"It seems that there had been some informality about their license, that the clergymen absolutely refused to marry them without a witness of some sort, and that my lucky appearance saved the bridegroom from having to sally out into the streets in search of a best man. The bride gave me a sovereign, and I mean to wear it on my watch chain in memory of the occasion.

"At the church door they separated, he driving back to the Temple and she to her own house. 'I shall drive out in the park at five, as usual,' she said, as she left him. I heard no more.

"They drove away in different directions, and I went off to make my own arrangements."

"Now," he said, "Miss Irene, or Madame, rather, returns from her drive at seven. We must be at Briony Lodge to meet her."

"And what then?"

"You must leave that to me."

He disappeared into his bedroom, and returned in a few minutes in the character of an amiable and simple-hearted Noncomformist clergyman.

It was 6.15 when I left Baker Street, and it still wanted ten minutes to the hour when we found ourselves in Serpentine Avenue.

It was already dusk, and the lamps were just being lighted as we paced up and down in front of Briony Lodge, waiting for the coming of its occupant.

Soon the gleam of the side-lights of a carriage came around the curve of the avenue. It was a smart little landau which rattled up to the door of Briony Lodge.

As it pulled up one of the loafing men at the corner dashed forward to open the door in the hope of earning a copper, but was elbowed away by another loafer, who had rushed up with the same intention.

A fierce quarrel broke out, which was increased by the two guardsmen, who took sides with one of the loungers, and by the scissors-grinder, who was equally hot upon the other side.

A blow was struck, and in an instant the lady, who had stepped from her carriage, was the centre of a little knot of flushed and struggling men who struck savagely at each other with their fists and sticks.

Holmes dashed into the crowd to protect the lady, but just as he reached her he gave a cry and dropped to the ground, with the blood running freely down his face.

At this the guardsmen took to their heels in one direction and the loungers in the other, while a number of better dressed people, who had watched the scuffle without taking part in it, crowded in to help the lady and to attend to the injured man.

Irene Adler, as I will still call her, had hurried up the steps; but she stood at the top with her superb figure outlined against the lights of the hall, looking back into the street.

"Is the poor gentleman much hurt?" she asked.

"He is dead," cried several voices.

"No, no, there's life in him," shouted another. "But he'll be gone before you can get him to a hospital."

"He's a brave fellow," said a woman. "They would have had the lady's purse and watch if it hadn't been for him. They were a gang, and a rough one, too. Ah! he's breathing now."

"He can't lie in the street. May we bring him in, marm?"

"Surely. Bring him into the sitting-room. There is a comfortable sofa there. This way, please."

Slowly and solemnly he was borne into Briony Lodge, and laid out in the principal room, while I observed the proceedings from my post by the window.

I took a smoke-rocket from under my ulster.

Holmes had sat up upon the couch, and I saw him motion like a man who is in need of air. A maid rushed across and threw open the window. At the same instant I saw him raise his hand, and at the signal I tossed my rocket into the room with a cry of "Fire."

The word was no sooner out of my mouth than the whole crowd of spectators, well-dressed and ill—gentlemen, ostlers and servant maids—joined in a general shriek of "Fire."

Thick clouds of smoke curled through the room and out at the open window. I caught a glimpse of rushing figures, and a moment later the voice of Holmes from within, assuring them that it was a false alarm.

Slipping through the shouting crowd I made my way to the corner of the street and in ten minutes was rejoiced to find my friend's arm in mine and to get away from the scene of uproar.

He walked swiftly and in silence for some few minutes, until we had turned down one of the quiet streets which leads toward the Edgeware road.

"You did it very nicely, doctor," he remarked. "Nothing could have been better. It is all right."

"You have the photograph?"

"I know where it is."

"And how did you find out?"

"She showed me, as I told you that she would."

"You of course saw that every one in the street was an accomplice. They were all engaged for the evening."

"I guessed as much."

"Then when the row broke out I had a little moist red paint in the palm of my hand. I rushed forward, fell down, clapped my hand to my face and became a piteous spectacle. It is an old trick."

"That also I could fathom."

"Then they carried me in. She was bound to have me in. What else could she do? And into her sitting room, which was the very room which I suspected. It lay between that and her bed room, and I was determined to see which. They laid me on a couch. I motioned for air, they were compelled to open the window, and you had your chance.

"When a women thinks that her house is on fire, her instinct is at once to rush to the thing which she values most.

"Irene responded beautifully. The photograph is in a recess behind a sliding panel just above the right bell pull. She was there in an instant, and I caught a glimpse of it as she half drew it out. When I cried out that it was a false alarm, she replaced it, glanced at the rocket, rushed from the room, and I have not seen her since.

"I rose, and making my excuse, escaped from the house. I hesitated whether to attempt to secure the photograph at once; but the coachman had come in, and, as he was watching me narrowly, it seemed safer to wait. A little over-precipitance may ruin all, and it might be a satisfaction to His Majesty to regain it with his own hands."

We had reached Baker Street and had stopped at the door. He was searching his pockets for the key, when some one passing said:

"Good-night, Mr. Sherlock Holmes."

"I've heard that voice before," said Holmes, staring down the dimly-lit street. "Now I wonder who the deuce that could have been."

* * * * * * * * *

I slept at Baker Street that night, and we were engaged upon our toast and coffee in the morning when the King of Bohemia rushed into the room.

"You have really got it!" he cried, grasping Sherlock Holmes by either shoulder, and looking eagerly into his face.

"Not yet."

"But you have hopes?"

"I have hopes."

"Then come. I am all impatience to be gone."

"We must have a cab."

"No, my brougham is waiting."

"Then that will simplify matters."

We descended, and started off once more for Briony Lodge.

"Irene Adler is married," remarked Holmes.

"Married! When?"

"Yesterday."

He relapsed into a moody silence, which was not broken until we drew up in Serpentine Avenue.

The door of Briony Lodge was open, and an elderly woman stood upon the steps.

She watched us with a sardonic eye, as we stepped from the brougham.

"Mr. Sherlock Holmes, I believe," said she.

"I am Mr. Holmes," answered my companion, looking at her with a questioning and rather startled gaze.

"Indeed! My mistress told me that you were likely to call. She left this morning with her husband by the 5:15 train from Charing Cross for the continent."

"What!" Sherlock Holmes staggered back, white with chagrin and surprise. "Do you mean that she has left England?"

"Never to return."

"And the papers?" asked the King, hoarsely. "All is lost."

"We shall see." Holmes pushed past the servant and rushed into the drawing room, followed by the King and myself.

Holmes rushed at the bell-pull, tore back a small sliding shutter, and plunging in his hand, pulled out a photograph and a letter.

The photograph was of Irene Adler herself in evening dress, the letter was superscribed to "Sherlock Holmes, Esq. To be left till called for."

My friend tore it open, and we all three read it together. It was dated at midnight of the previous night, and ran in this way:

My Dear Mr. Sherlock Holmes: You really did it very well. You took me in completely. Until after the alarm of fire, I had not a suspicion. But then, when I found how I had betrayed myself, I began to think. I had been warned against you months ago. I had been told that if the king employed an agent, it would certainly be you. And your address had been given me. Yet, with all this, you made me reveal what you wanted to know.

Even after I became suspicious, I found it hard to think evil of such a dear kind, old clergyman. But, you know, I have been trained as an actress myself. Male costume is nothing new to me.

I often take advantage of the freedom which it gives. I sent John, the coachman, to watch you, ran up stairs, got into my walking clothes, as I call them, and came down just as you departed.

Well, I followed you to your door, and so made sure that I was really an object of interest to the celebrated Mr. Sherlock Holmes. Then I, rather imprudently wished you good night, and started for the Temple to see my husband.

We both thought the best resource was flight, when pursued by so formidable an antagonist; so you will find the nest empty when you call to-morrow. As to the photograph, your client may rest in peace. I love and am loved by a better man than he.

The king may do what he will without hindrance from one whom he has cruelly wronged.

I keep it only to safeguard myself, and to preserve a weapon which will always secure me from any steps which he might take in the future. I leave a photograph which he might care to possess; and I remain, dear Mr. Sherlock Holmes, very truly yours,

IRENE NORTON, NE ADLER.

"I am sorry," said Holmes, "that I have been unable to bring Your Majesty's business to a more successful conclusion."

"On the contrary, my dear sir," cried the King, "nothing can be more successful. I know that her word is inviolate. The photograph is now as safe as if it were in the fire."

"I am glad to hear Your Majesty say so."

"I am immensely indebted to you. Pray tell me in what way I can reward you. This ring—" He slipped an emerald snake ring from his finger, and held it out upon the palm of his hand.

"Your Majesty has something which I should value even more highly," said Holmes.

"You have but to name it."

"This photograph!"

The King started at him in amazement.

"Irene's photograph!" he cried. "Certainly, if you wish it."

"I thank Your Majesty. Then there is no more to be done in this matter. I have the honor to wish you a very good morning."

"OLD PROBABILITIES."

HOW THE WEATHER PREDICTIONS ARE MADE.

"My office is the highest in the country, not excepting President Harrison's." Sergeant Frankenfield, of the signal service, was referring to the location of his den on the seventeenth floor of the Auditorium building and meant no disrespect to the chief magistracy. He was comfortably ensconced in an easy office chair studying the weather chart just issued and meditating as to whether he would give Chicago snow or pleasant weather. "So you want an insight into the mysteries of my weather-guessing methods. Well, I will show you," said he, "how we do it, and then I think that it will appear like very simple work. In the first place let me get my keys and we will go up and take a look at the instruments." Out on the roof of the tower he went, then up a winding stairway to the roof of the shelter house. Here are the wind vane and the anemometers. The latter are instruments for measuring the velocity of the wind and have four arms revolving horizontally, at the end of each of which is a hemispherical hollow cup of iron to catch the breeze. Ordinarily only one of these anemometers is in use, but they are changed every month and before taking down the one that has been in use in order to clean it, the pair are run side by side for twenty-four hours as a test of correctness. Both the vane and anemometer are connected by electric wires with registers in the office below. These show the direction of the wind every five minutes and also mark every mile it travels. On the roof of the tower is a covered table surrounded by fixed blinds to protect the instruments from the rain, and here are kept the thermometers, of which there are four, all of the highest grade. The simplest are the ordinary self-registering maximum and minimum thermometers. The other two are delicate Richard alcoholic registering instruments. One of these registers on a paper-covered cylinder in the same case, while the other is connected by wire with a register in the office below. The remaining instrument in this stand is a hygrometer for ascertaining the amount of humidity in the atmosphere. This consists of two thermometers side by side in a frame, the bulb of one of them being covered with cotton. When an observation is to be taken the cotton is saturated with water and the frame is rapidly revolved. The evaporation of the water lowers the mercury in the wet bulb, and from the difference between the two readings is obtained the percentage of moisture and the temperature at which dew would fall, or, as it is termed the dew point. In one corner of the tower stand the rain and snow gauges. These are tall, galvanized iron buckets about eight inches in diameter and twenty-four inches in height. In the bottom of the bucket is a well of small diameter, so that a slight fall of rain will show in the well ten times as great a depth as in the main receptacle. In this well is a float, whose rising turns a wheel connected by wires with a register on which a stroke is made whenever 2-100ths of an inch of water is caught. One inch of melted snow is considered equal to ten inches of the freshly fallen flakes. All the instruments on the roof having been examined, the sergeant leads the way back to the office. Here are the registers which print the records on which the benefits to be derived from the service depend. In a little mahogony and glass case is a cylinder, 4 inches in diameter and 6 inches in length, covered with paper which is ruled with parallel lines. At the side of this cylinder and almost touching it are three arms, the tips of which are provided with pencils or pens. These arms are connected with the vane by wires, anemometer and rain gauge, and the cylinder, which is actuated by clock-work, is made to revolve every six hours. The first arm is over four parallel columns headed N. E. S. W., and every five minutes is pressed to the face of the cylinder. If the wind is due north a stroke is made in the N. column; if northeast, a stroke is made in both the N. and E. columns. The second arm connected with the anemometer is forced against the paper whenever that instrument shows that a mile of wind has passed and makes a short mark lengthwise on the cylinder. The third arm is connected with the rain guage and makes a stroke whenever 2-100ths of an inch of rain falls. Thus on this one sheet of paper is recorded the direction and strength of the wind and the amount of rainfall for twelve hours, and the paper being ruled off for five minute periods, the observer can tell at a glance almost the precise moment at which any change took place. On another stand is the register connected with the thermometer on the roof, and it works on the same principle as the one just described. By its side is the delicate aneroid barometer, also connected with its register. With these three records at hand the observer could after a laps of years describe accurately the meteorological condition of any desired day. "Now," said the sergeant, "you have seen how our observations are taken, and twice every day, at 7 A. M. and 7 P.M., similar observations are taken at the 182 stations of the department. Each of these stations are on some circuit of the Western Union telegraph lines, and shortly after the hours for taking the observations a line is cleared for transmitting the reports. Take for example the circuit on the Atlantic coast from Jacksonville, Fla., to Eastport, Me. At 7.30 A. M. the line is free and Jacksonville sends her report. This is taken down at every other station, and then Charleston sends hers and so on up the line until when Eastport has sent hers every station on the circuit has the entire list. At certain points these circuits cross and information is exchanged, so that in a very few moments each office is in the possession of a full report from all over the country. When these reports are all in the office we proceed to make use of them. We have maps already prepared showing all the principle stations in the Uuited States and also exchange stations in British America. At each of these points we draw small circles, which show the state of the sky, being covered with straight lines if cloudy, half covered if fair and blank if clear. A letter 'R' in the circle means rain. With an arrow we mark the direction of the wind. To the right of the circle we set down the height of the barometer, then the temperature and lastly the velocity of the wind. Then we proceed to make what my little 3-year-old boy calls fish worms. Taking a blue pencil we start from Eastport, Me., where the barometer reading is, for example, 29.9 inches, and we draw a continuous line through each place at which the air pressure is the same. This may take us through Albany, Cleveland, Kansas City, Salt Lake and north into British America. This line is called an isobar, or line of equal pressure. When we have drawn these lines for each one-tenth of an inch difference in pressure we usually find that the line of lowest pressure forms an irregular oval, and this oval is a well defined storm center. We also note that the general direction of the wind is toward this centre and away from the center of high barometer. The velocity of the wind will enable us to judge very closely the speed with which this storm center will move during the coming twelve or twenty-four hours and also the direction it will probably take. Next, with a red pencil we draw lines through the stations reporting the same temperature, and these lines we call isotherms. They divide the map into irregular figures, shaped much like dissected picture puzzels or clouds on a summer day. These sections show an average difference in temperature of ten degrees, and if the direction of the wind and its velocity show that one of these clouds, with a temperature of 40 degrees, will be swept over a station, where the thermometer now marks 50 degrees we know that it is safe to predict cooler weather. Lastly we compare the figures of this report with those of the previous one and note the difference in the temperatures and in the dew points. If the latter difference is greater than the former it indicates rain, and on the contrary if it is less we are safe in predicting clear weather. When the entire country is quiet we can usually predict with accuracy the weather for forty-eight hours, but under ordinary circumstances we do not care to risk our reputations on anything more than twenty-four hours distant. We are now issuing about forty copies of weather charts for public information, but we propose after Jan. 1st to distribute about 400. They will be sent to postmasters and others in the neighboring towns, where they can be posted for the benefit of the public. A great many people are interested in the study of the weather, there being over 2,200 stations in the United States where observations are regularly taken by volunteer observers, and the number is continually on the increase."—*Chicago Mercantile Journal.*

SEASONABLE CAUTION.—None but the brave attend the church fair.—*Elmira Gazette.*

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

December.

MEATS.—Beef, mutton, pork, venison, veal.

POULTRY AND GAME.—Chickens, fowls, duck, geese, turkeys, grouse, capons, hare, partridge, pheasants, rabbits, pea-fowls, guinea-fowl, snipe, widgeon, wild ducks, woodcock.

FISH.—Brill, carp, cod, crabs, perch, salmon, smelts, soles, sprats, tench, turbot, whiting, halibut, sturgeon, oysters.

PRACTICAL RECIPES.

ROAST CHICKEN.—Clean your chickens and singe them; prepare a stuffing of bread crumbs, seasoned with sage, thyme, salt, pepper, chopped onion and melted butter; wet it with a little milk and stuff your chickens; sew them up, and tie the wings and legs close to the body. Rub them all over with salt. Take a lump of soft butter in your hand and rub them over with it. Dredge them thoroughly with flour, and put them in a quick oven to brown; then pour enough water into the pan to cover the bottom, and baste them every fifteen minutes until done. Add more water as it boils away, keeping, however, only enough in the pan to cover the bottom. Turn the chickens so that they shall be evenly browned all over. Allow an hour and a half for a pair of good-sized chickens.

OYSTERS IN BEEF GRAVY.—Put in a saucepan a good tablespoonful of clear beef dripping or butter, a small bit of bay leaf, a tablespoonful of minced onion, and a scant teaspoonful of salt. Cook until the onion browns; then add two cupfuls of beef broth and two and a half teaspoonfuls browned flour. Simmer until it thickens, then strain and add a dozen oysters. Serve on thin slices of nicely browned toast.

CREAM PIES.—Boil two cupfuls of milk with two or three bitter almonds, a stick of cinnamon, a piece of lemon peel, and seven or eight lumps of sugar, until the flavors are extracted; then strain and stir until cool; beat up the yolks of six eggs and mix well with the milk; stir the whole over a slow fire until it is like cream, flavor with almond or rose water, and bake in a deep pie plate with a lower crust only.

MINCE MEAT.—Boil a fresh beef tongue and chop it very fine; add to this two pounds suet, finely chopped, four pounds stoned raisins, two pounds Sultana raisins, three pounds currants, washed and dried, two pounds white sugar, one pint brandy, one bottle wine, nutmeg and cinnamon to taste, and a little allspice. Add apples the day you bake, about half as many, chopped very fine, as you use mince meat. Line the dish with light paste, fill with the mince meat, cover with a crust, and bake in a moderate oven. The ingredients of the mince meat should be thoroughly mixed together and kept in a covered jar.

PICKLED LEMONS.—Wash and wipe six large lemons; put with them one pound salt, six large cloves of garlic, two ounces horseradish, sliced thin, one-half ounce cloves, mace, nutmeg and cayenne pepper, two ounces mustard, two quarts of vinegar. Boil all together for fifteen minutes, then pour into a jar, and stir daily for six weeks. Keep the jar closely covered.

SPONGE CAKE.—Whites fourteen eggs, yolks seven eggs, ten ounces flour, one pound sugar; flavor with grated lemon peel.

YEAST POWDER.—Mix thoroughly one pound soda with two pounds cream of tartar. Use one teaspoonful of this mixture to a pint of flour, sifting it with the flour.

ELECTROLYSIS.

HOW SUPERFLUOUS HAIR IS REMOVED BY ELECTRICITY.

The following is the text of a paper read by Dr. P. S. Hayes at a recent meeting of the American Electro-Therapeutical Association: The removal of superfluous hairs by means of electrolysis was primarily devised as a purely therapeutic measure. It was only after this method had been demonstrated to be a perfect success in the destruction of hairs in entropium that this procedure was diverted from its strictly therapeutic channel and applied to a broader field, and used in what may be called a cosmetic, rather than a therapeutic, sense. Even if confined to the cosmetic use, there is a decided therapeutic effect produced in the liberation of many ladies from a self-imposed seclusion, if not actual close confinement, akin to prison life. The gloom produced from this seclusion has frequently made life a burden, and been a factor of no small moment in the development of a melancholia. A correspondent writes that he understands that this operation is largely a mechanical one, and he desires instruction enough to know how, and then he will be able to do as well as anyone. This latter statement he does not make, but from the tenor of his letter is readily inferred. The operation is mechanical, much in the same sense that the repairing of a watch is mechanical; but it is not every watchmaker, to say nothing of the broad class of mechanics, to whom we would intrust our valuable watches. Those who first demonstrated the possibility of the permanent removal of superfluous hair by means of electrolysis did their work so thoroughly and understood the laws of electrolysis so well, that but little has been added to the technique of the operation during the past six years. Whether the operation is for therapeutic or cosmetic purposes, two points are to be kept constantly in the mind, namely, to destroy the hair and then see to it that you do not leave indelible proof in scars that you have not done your work thoroughly. The statement is frequently made that this operation leaves no scars. The frequent occurrence of scars in positions that tell of the destruction of offending hairs, as well as the form of the scar left, gives the lie to the statement. If this were not sufficient, then the application that we have for the removal or modification of scars, or the completion of the work that some one else has commenced, but by reason of clumsiness has made the patient seek some more skilful operator, will leave no doubt in the minds of all that scars may result. Without entering into the detail of the operation so well understood, I will take up the points that have aided me most in making the operation a perfect success, and leaving little to be desired, unless it be that the time consumed in its performance may be abridged.

The history of the changes and modifications in the needle has shown that we did not have all that was to be desired in this important part of our apparatus. Theoretically the needle should be so constructed that it will reach the bottom of the hair follicle and come in contact with the papilla without doing violence to the tissues, and, finally, to be so arranged that the current will exert its electrolytic effects only at the point of contact with the papilla. Practically this is impossible of accomplishment: but in this direction much more has been accomplished than would at first sight seem possible. I early discovered that a blunt-pointed needle was much better than a sharp one, and a thin one than a thick one. After a long series of experiments I came to the conclusion that steel was the only material that would give us a needle of sufficient tenuity, and yet have the strength and rigidity to accomplish the desired result. The best material for the needle is found in the jewelers' broach, an instrument for reaming out the jewels in watches. This is ground to (so as to be of) a diameter varying from $\frac{1}{200}$ to $\frac{3}{200}$ of an inch. From the point to a space of one-sixteenth of an inch back it should be slightly thicker than the shaft; although this bulbous joint is of advantage, it is not an absolute necessity. The point of the needle is the main thing, and it should represent as nearly as possible a hemisphere. A conical point should never be used because of the danger of piercing the walls of the hair follicle. The temper of the jewelers' broach of necessity renders the steel exceeding brittle, and it has been found of advantage to draw the temper in order to prevent breakage of the needle. This is best accomplished by taking a glass tube of about one-fourth inch in diameter and closing one end, and introducing the needle into the closed tube. This is then held in the flame of an alcohol lamp or Bunsen burner until the tube begins to become slightly red, when it is put aside to cool with the needle in it. When cold the needle will be found to have had its temper drawn so that it can be bent at right angles and straightened again without breaking. It is still quite rigid enough for our purpose. Should the attempt be made to heat needles as thin as those described in the naked flame they will take fire and burn, thus completely destroying their usefulness. I present for your consideration, to illustrate these facts, some needles prepared as I have directed and furnished by the McIntosh Battery and Optical Company, of Chicago. It has been with great difficulty that I have been enabled to have the needles manufactured of the diameter given in this paper. While the shape was easily obtained and the finish of the needle all that could be desired, the size was almost, without exception, from three to five times too great. Before using a needle I invariably examine it with a lens of three-fourths inch focus in order to see that the point is the proper shape. If the shape is not as it should be, another needle is selected. My experience has been that I could ill afford to work with a needle that was not as it should be. I have found that a needle bent at an angle varying from 45 to 90 degrees, from two to three-eighths of an inch from its point, serves my purpose better than a straight one. All things considered, we accomplish our best results with the thinnest needle. (Those who have once used a needle prepared in the manner described, and as exemplified by the samples shown, will never use any other form of needle.)

The strength of current required (for this operation) varies from three-fourths of a milliampere to a milliampere and one-half, and, in rare instances, possibly, three milliamperes. The strength of the current, however, must, of necessity, be regulated by the amount of chemical action which takes place around the needle, as well as by the amount of pain produced. In this operation the chemical action produced around the needle (the negative electrode) is a much better index than the milliammeter. In fact, the milliammeter is all but a useless instrument in electrolytic epilation. As a rule, the less current the longer the time required to destroy the tissue, including the hair papilla. From three to six cells of the diamond carbon battery is usually sufficient. The question has been frequently asked whether storage cells could be used. The reply is, that if three or four storage cells are connected in series for tension, the current obtained from such a battery can be used. The resistance of the tissues, of the thin steel needle, of the ordinary electrode and of the cords, is so great that our milliammeter will register no greater strength of current than as though we had used the same number of Bunsen cells. The commercial current from an Edison plant has been successfully used. The pain produced is ordinarily so great as to make its use undesirable. The Edison current has an ordinary pressure of about 110 volts. To reduce this current so that we can use it for epilation, we find that the difficulty to be overcome is that, with our present means of controlling the current, we reduce the amperage much faster than we do the voltage, and, consequently, get a current of tension which is more painful than current obtained from a battery. The results of a number of observations have led me

to formulate the following: Have as little resistance in the circuit outside of the battery as possible. A battery with large cells and large elements is preferable to one with small elements. Two cells of a storage or galvano-cautery battery are equal to about three cells of a diamond carbon battery. Where the external resistance is as great as it is in this operation it will be found that the milliammeter will register about one milliampere for three diamond carbon or two storage or galvano-cautery cells. It is thus readily seen that the current from the storage or cautery battery has been so reduced by the resistance of the body and the circuit, in which it is included, as to be unable to heat the needle at all. We must count the volts rather than the amperes. In the above statements, relative to the requisite number of cells of the various batteries required, it will be found that the volts in two cautery cells will equal the number in three diamond carbon cells.

I desire to emphasize but one or two facts, rather than to give any detailed account of the operation. Always use care in introducing the needle, and see that it follows the hair closely. Do not carry the current so long as to produce a lesion that will form a scar on healing. If the needle is arrested before it has entered much beyond the neck of the follicle, by reason of the size and density of the hair and root sheaths, allow the current to pass until any adhesions that may exist at the point are overcome. It would be well, in this case, to cause the needle to act on the tissues on all sides of the hair. Remove the hair and the root sheaths will come with it, if the operation has been carefully done. The re-introduction of the needle in the now empty follicle is easily accomplished, and, if care is used, the papilla will be reached without trouble, and destroyed with more certainty and less destruction of tissue than as though this method had not been followed. This method is only to be used in those cases where the needle does not follow the hair to the papilla when first introduced. The re introduction of the needle insures the destruction of a much greater percentage of hairs than where this is not done.

We can state that but little that is new has been added to our methods in electrolytic epilation during the past few years. The advance in this branch has been brought about by improving the apparatus at hand, rather than by the introduction of new apparatus. In the needle we note the exceeding thinness of it, the hemispherical and bulbous shape of the point, and the drawing of the temper. In the battery, that cells with comparatively large amperage (large surface of plates) are of advantage. In the circuit, outside of the battery, that the conductors shall offer but little resistance; the connections be good; the positive electrode large, and that every piece of apparatus, such as a rheostat and milliammeter, that would interpose resistance, be left out of the circuit. In the operation, that it is advisable in many instances to remove the hair before the needle has reached, and the current has destroyed, the papilla, and then reintroduce the needle, which now readily glides into the follicle made vacant by the hair and its root sheath. With the most approved apparatus the ultimate success depends as much upon the man as the means. Every operator leaves his record on the face of his subjects, and success or failure, as well as gratitude or regret (according to the result), is accorded to him who essays this simple yet delicate operation.

AROMA OF WINE.—At a recent meeting of the Paris Academy of Sciences, M. Rommier read a paper on the yeast of wine—the bouquet, or aroma, of the wine made from grapes of the same species but grown in different districts being quiet distant. The characteristic bouquet seems to be due to the district, and wine from shifted vines or cuttings does not neccessarily possess the special flavor of the original when planted in other districts. It is well known that the best wines are produced from grapes raised on volcanic soils.

ELECTRIC CLOCK.

SOMETHING UNIQUE IN THE WAY OF A TIMEPIECE.

The first tower clock actuated by electricity in the United States has just been put in successful operation in the new court house in Los Angeles, Cal. This pioneer timepiece, that is commonly termed "the big clock," might be called a botanical parlance a composite, for it is in reality four clocks, as each dial in the tower is supplied with its own separate apparatus, operated by wires from the main battery, There are also sixteen smaller clocks located in various parts of the magnificient new building, and these twenty clocks beat time together without ticking but with instantaneous precision. The regulator which does the timekeeping is a large eight-day clock that differs from an ordinary regulator only in being provided with two insulated wires, and when its second hand completes its round it comes in contact with a platinum point, which instantaneous touch makes a momentary electric circuit by means of the wires, the flash communicating with all the other clocks, and each obeys the telegraphic mandate by pointing a new minute. The source of the electricity for all this automatic whispering is found in batteries that are located in one of the tower rooms, where two separate installations, each containing 211 cells, are in a cabinet together. Only one of the two sets is, however, required at a time—the other is simply for use in case of an emergency, and it is but the work of an instant to connect the whole apparatus with the unused battery by simply turning the handle of a compound switch.

BUFFALO LITHIA WATER

For BRIGHT'S DISEASE OF THE KIDNEYS, THE GOUTY DIATHESIS, Etc.



Dr. WM. A. HAMMOND'S Sanitarium for Treatment of Diseases of Nervous System, 14th Street and Sheridan Avenue, Washington, D. C.

Dr. WM. A. HAMMOND,

WASHINGTON, D. C.,

Surgeon-General U. S. Army (retired), formerly Professor of Diseases of the Mind and Nervous System in the University of New York, etc., says:

"I have for some time made use of the

BUFFALO LITHIA WATER

in cases of affections of the Nervous System, complicated with Bright's Disease of the Kidneys, or with a Gouty Diathesis. The results have been eminently satisfactory. Lithia has for many years been a favorite with me in like cases, but the

BUFFALO LITHIA WATER ACTS BETTER THAN ANY EXTEMPORANEOUS SOLUTION

of the Lithia salts, and is, moreover, better borne by the stomach. I also often prescribe it in those cases of cerebral hyperæmia, resulting from over mental work—in which the condition called nervous dyspepsia exists—and generally with marked benefit."

WATER IN CASES OF ONE DOZEN HALF GALLON BOTTLES, $5.00, F. O. B. HERE.

☞ For sale by all first-class Druggists, and Pamphlet sent to any address.

THOMAS F. COODE, Proprietor, Buffalo Lithia Springs, Va.

☞ Please mention the AMERICAN ANALYST.

The clocks need not lose a minute in the change, for the switching can be accomplished between the electric flashes. Among the interesting parts of the ingenious mechanism is a relay through which all the electric currents pass. This relay has at one end an armature and magnet similar to, but larger than, those seen in a common telegraphic sounder. The lever of the magnet works a shaft that causes 18 brass fingers to vibrate. When the fingers fall they complete the electric current in eighteen wires that run to the 20 dials—connection being as simultaneously broken when the fingers are raised. Ocular proof of the presence of electricity is given in green sparks on the tips of the brass points when the connection is broken. Many persons climb the extra flight of stairs above the battery room and only pause in the section of the tower where the four great dials are placed. The gigantic hands of rolled steel each weigh 40 pounds and are to be seen dimly through the translucent glass of the dials that are about 16 feet in diameter. The shaft that carries the hands pierces the center of the disk where it is connected with a large armature with an attachment of brass cogwheels. Each flash over the wires leading from the battery room whirls through the big spool of wire in the armature, magnetizes the soft iron core and shield, swings a ratchet lever, gives a turn to the brass cogwheels and thus causes the minute hand outside to swing along nearly ten inches. We go down to the outside world 200 feet below, and when we turn to look up once more at the minute hand we understand that its seeming short steps each announce that down in the heart of the great building the tiny, trembling second hand of the regulator has just completed another delicate cycle and marked the flight of another minute.



There is no place like home

—when *Pearline* is used in it. There is no place about home where *Pearline* can't be used.

Pearline takes the hard work and drudgery out of —keeping a home clean.

It is next to having the washing and cleaning done for you, and well done at that.

It washes everything that can be washed. It cleans paint, marble, carpets, hangings—in fact everything cleanable.

It is a luxury in the bath. It is emphatically without harm to person or things. With *Pearline* you have rest; it rests with you to have *Pearline*.

Your Home is probably invaded by peddlers, who claim the stuff they offer is Pearline, "the same as" Pearline, or "as good as" Pearline. IT'S FALSE—Pearline has no equal, and is never peddled. 238 JAMES PYLE, New York.

The four
Official Reports,

U. S. Govern't, Bulletin No. 10; Canadian Gov't, Bulletin No. 13; Ohio Food Commission, and N. J. Food Commission, show

Cleveland's Baking Powder

strongest of all

pure cream of tartar powders, yielding (average) 12.87 per cent. carbonic acid gas.

The Scientific American, after a most careful examination of the Official Reports, says: "The showing Cleveland's makes, compared with all the principal brands, is such as to put it emphatically at the head."

Happy and content is a home with "The Rochester; a lamp with the light of the morning. Catalogues, write Rochester Lamp Co., New York.

Armour's

Extract of BEEF.

The best and most economical "Stock" for Soups, Etc.

One pound equals forty-five pounds of prime lean Beef.

Send to us for our book of receipts, showing use of **ARMOUR'S EXTRACT** in Soups and Sauces.

ARMOUR & CO., Chicago.

BUSINESS NOTES.

HORSFORD'S ACID PHOSPHATE

Imparts renewed strength and vigor where there has been exhaustion. Dr. C. R. Dake, Belleville, Ill., says: "I have found it, and it alone, to be capable of producing a sweet and natural sleep in cases or insomnia from overwork of the brain, which so often occurs in active professional and business men."

PAINTED PAPER.—Unsized paper is coated with an aqueous solution of dextrine. When this coat is dry a layer of siccative oil paint is applied; and the sheet so obtained may be used for packing purposes, to render fabrics impermeable to water, etc.

The Old Doctor's Book of Secrets.

Tells everything! Over 400 pages, closely printed, with illustrations. Contains medical receipts and prescriptions, and much valuable information all young men should know. Sent securely wrapped in plain wrapper, postage prepaid, to any address for $1.00.

(Send for it. One receipt alone may save you many times its cost

EUREKA PUB. CO., Box 441, Chicago.

Fine Table Wines

From our Celebrated Orleans Vineyard.

Producers of the

ECLIPSE

CHAMPAGNE,

530 Washington St.

SAN FRANCISCO.

Arpad Haraszthy & Co

GROWERS OF

Chateau d'Orleans, the highest grade Claret made in America.

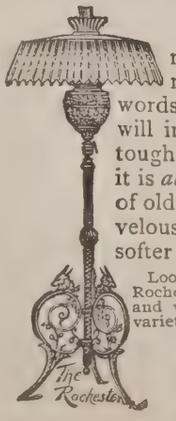
Cabernet Blend, the richest and finest of Table Clarets.

O V Chablis, possessed of all the delicate pungency of its French counterpart.

O V Sauterne, with the exact character and *Seve* of imported Sauternes.

The **Chateau d'Orleans** and **O V Chablis** are sold in glass only.

"Seeing is Believing."



And a good lamp must be simple; when it is not simple it is not good. *Simple, Beautiful, Good*—these words mean much, but to see "The Rochester" will impress the truth more forcibly. All metal, tough and seamless, and made in three pieces only, it is *absolutely safe* and *unbreakable*. Like Aladdin's of old, it is indeed a "wonderful lamp," for its marvelous light is purer and brighter than gas light, softer than electric light and more cheerful than either.



Look for this stamp—THE ROCHESTER. If the lamp dealer has n't the **genuine** Rochester, and the style you want, send to us for our new illustrated catalogue, and we will send you a lamp safely by express—your choice of over **2,000** varieties from the *Largest Lamp Store in the World.*

ROCHESTER LAMP CO., 42 Park Place, New York City.

"The Rochester."

GRANT.

SHERMAN.

SHERIDAN.

McCLELLAN.

GEN. GRANT'S MEMOIRS.

Original $7 Edition for 30 Cents.

NO book, excepting the Bible, has ever had such a sale in the United States as General Grant's Memoirs. 650,000 copies have already gone into the homes of the rich, but the subscription price of $7.00 has placed it beyond the reach of people in moderate circumstances. **If 650,000 people have been willing to pay $7.00 for Grant's Memoirs, there must be a couple of million people in the United States who want them, and will jump at the opportunity** to buy them at the low figure here offered.

We will send you General Grant's Memoirs, publisher's original edition, best paper, cloth, green and gold binding, hitherto sold by subscription at $7.00,

FOR 30 CENTS!—FOR 30 CENTS!—ABSOLUTELY ONLY 30 CENTS!

and absolutely a proposition such as has never been made in the history of book publishing. The two splendid volumes of Grant's Memoirs, of which 650,000 copies have been already sold—not a cheap edition, but the best—for 30 cents; provided you send your subscription of $1.00 to the **AMERICAN ANALYST** one year, and also a subscription of $3.00 for the **COSMOPOLITAN MAGAZINE,** the brightest and cheapest of the great illustrated monthlies, itself equal to the best $4.00 magazine.

The **COSMOPOLITAN** is enabled to make this offer because of **the purchase of 600,000 volumes at a price which even publishers would deem impossible, and with the idea of running up its circulation to half a million copies.** By contract with the **COSMOPOLITAN,** and at no profit to us, we are enabled to offer our readers a share in the low price obtained through the largest purchase of books ever made in the history of the world.

If, however, you have Grant's books, our offer will permit you to take instead,

GEN. SHERMAN'S MEMOIRS, 2 Vols., sold by subscription for $5.00
GEN. SHERIDAN'S MEMOIRS, 2 Vols., sold by subscription for 6.00
GEN. McCLELLAN'S MEMOIRS, sold by subscription for . . 3.75

All of these are bound in cloth, green and gold, in uniform style with Grant's Memoirs.

Send us at once $3.00 for year's subscription to the **COSMOPOLITAN,** $1.00 for year's subscription to the **AMERICAN ANALYST,** and 30 cents for a set of Memoirs—$4.30 in all—to which add postage on the particular set of Memoirs selected.

WHY DO WE MAKE THESE GRAND OFFERS?

Simply because we want every intelligent family to keep well informed as to the popular science of this progressive era. We publish the **only popular journal on this subject—THE AMERICAN ANALYST.** Its subscription list is already very large; but we want at least **Fifty Thousand additional subscribers before January 1, 1892.** We know that, if we shall get them, we shall be able to hold most of them as permanent readers of our periodical. So at present sacrifice and at great cost, we have entered into a combination. The **COSMOPOLITAN** is the brightest and cheapest of the great illustrated monthly magazines; it gives annually 1,536 pages by the ablest writers, and over 1,200 illustrations by the ablest artists; and is just as interesting to the young boy or girl as to the oldest grey head. Now, then, we ask you to send us merely $4.30, and, on receipt of same, we will mail them to you regularly for **one year,** and will also send you (making no charge for the books) a set of **GENERAL GRANT'S MEMOIRS,** or either of the other works that you may select. **NO SUCH OFFER AS THIS WAS EVER MADE BEFORE BY ANY PUBLISHER SINCE TIME BEGAN!**

UNLESS OTHERWISE DIRECTED,

we shall invariably ship the books by express, charges to be paid by the receiver. If you wish the volumes forwarded by mail, you must distinctly say so at the time when you send us your address and the Money; and you must also enclose postage to prepay the packages at the following rates: **GRANT'S MEMOIRS,** 96 ozs., 48c.; **SHERMAN'S MEMOIRS,** 92 ozs., 46c.; **SHERIDAN'S MEMOIRS,** 84 ozs., 42c.; **McCLELLAN'S MEMOIRS,** 48 ozs., 24c. The government rate for postage on books is one-half cent per ounce. The **COSMOPOLITAN** and **AMERICAN ANALYST** are sent to subscribers free of postage.

SEND ALL ORDERS ADDRESSED

THE ANALYST PUBLISHING CO.,

19 Park Place, New York.

HARTSHORN'S SELF-ACTING SHADE ROLLERS

NOTICE SCRIPT NAME OF Stewart Hartshorn ON LABEL, AND GET THE GENUINE HARTSHORN

THE New Model "HALL"



A Perfect Typewriter. Best Manifolder Terms to Agents Liberal. Portable. Inexpensive. Writes All Languages *Read Mr. Howell's Opinion.*

"I wish to express my very great satisfaction with the Hall typewriter. Impressi n and alignment are both more perfect than any typewriter that I k ow, and it is simply a pleasu e to use it. It is delightfully simple and manageab.e."

(Signed) W. D. HOWELLS.

Send for Catalogue and Specimens of work.

Address N. TYPEWRITER CO., 10 Temple Pl., BOSTON.

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,

HOWARD STREET, BOSTON, MASS.

SWIFT'S

CHOICE

Chicago Dressed Beef

AND

MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,

UNION STOCK YARDS,

CHICAGO, ILLS.

EVERY one in need of information on the subject of advertising will do well to obtain a copy of "Book for Advertisers," 368 pages, price one dollar. Mailed, postage paid, on receipt of price. Contains a careful compilation from the American Newspaper Directory of all the best papers and class journals; gives the circulation rating of every one, and a good deal of information about rates and other matters pertaining to the business of advertising. Address

ROWELL'S ADVERTISING BUREAU,
10 Spruce St., New York.

$5, $10 and $20

CONFEDERATE BILLS,

only five cents each. AGENTS WANTED.

SOUTHERN STAR, Atlanta, Ga.

"BILLET"

are

Carefully Selected French Sardines,

Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS.

AGENTS WANTED ON SALARY

or commission, to handle the New Patent Chemical Ink Erasing Pencil. Agents making $50 per week. X218

MONROE ERASER MFG. CO., LA CROSSE, WIS.

CONFEDERATE MONEY.

Warranted Genuine and in Good Condition.

We are extensive dealers in Confederate Money—rare relics of our late civil war; also Bullets, Cannon Balls, etc. We want agents in every city North to sell these mementoes, and we will pay agents handsomely to sell our goods. We will furnish the money to those desiring at the following retail prices: Shinplasters, 10, 25, 50 and 75 cents each, or the entire set 50 cents. Complete sets, consisting of $100, $50, $20, $10, $5, $2, $1, 50c., $1 per set. $500 bills, $2 50 each. $100 bills, 15 cents, or two for 25 cents. $50 bills, 10 cents, or two for 15 cents. $5 and $20, 5 cents each. 50c., $1 and $2, 25 cents each. Inquirers enclose stamp for reply.

Publishers of SOUTHERN AGENT, Atlanta, Ga.

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

THE LABORATORY.

To Inventors, Manufacturers and Applicants for Patents

The AMERICAN ANALYST may be consulted upon all matters involving theoretical or applied chemistry. Advice and opinions given. Analyses and assays made. Patents perfected and secured. Terms reasonable.

Address, AMERICAN ANALYST,
10 Park Place, N. Y.

LITTLE BOYS AND GIRLS

MAKE EASILY $2 A DAY.

Write for particulars. Address

BARKER PUBLISHING COMPANY, Atlanta, Ga.

Pure Lager Beer,

"IMPERIAL" and "CULMBACHER"

Brewed & Bottled SPECIALLY FOR HOTELS, CLUBS AND PRIVATE FAMILIES BY

Beadleston & Woerz

291 W. 10th St. New York.

Orders by Postal Card promptly attended to.

We can save you Fifty Dollars when you Build. See



A complete set of Plans to build from, simply state about price of dwelling desired. 25 cts. in stamps. Our book "Beautiful Homes." 25 cts. Our monthly book "The National Builder," 25 cts. Address

The National Builder, Adams Exp. Bldg., Chicago, Ill.

BLAIR'S PILLS.



Great English Remedy for GOUT, RHEUMATISM and KIDNEY COMPLAINTS.

SURE, PROMPT and EFFECTIVE.

Large Box, 34; Small, 14 Pills.

At all Druggists, and

224 WILLIAM STREET, NEW YORK.

THE ORIGINAL AND GENUINE (WORCESTERSHIRE SAUCE).



LEA & PERRINS' SAUCE

In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—

Lea & Perrins

Beware of Imitations; see that you get Lea & Perrins'

For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS. NEW YORK.

RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,

184 Greenwich St., N. Y.

GOITRE, or THICK NECK.

I have a positive, speedy, cleanly, harmless and almost inexpensive cure. Come or write to me at 28 Arlington Court, CLEVELAND, Ohio. It is no iodine smear. Cure made permanent.

Dr. J. CASKEY.

FORTY DOLLARS FREE.

How many words can you make using only the letters in the words **"Hat Identifier?"** First prize, $25; second prize, $10; third prize, $5; fourth prize, one dozen "Identifiers." Send a DIME for rules governing contest and sample "Identifier" to ILLINOIS METAL CO., Royal Insurance Building, Chicago, Ill.

A COLLEGE EDUCATION FREE!

In one of the oldest, most prominent Colleges in the country, **ABSOLUTELY FREE.** A chance of a lifetime. Do you want it? You do not need to invest a dollar. Write for particulars to one of the brightest and most original illustrated monthlies in America. Address,

BUSINESS WORLD, DETROIT, MICH.

GOLD MEDAL, PARIS, 1878.



W. BAKER & Co.'s Breakfast Cocoa

from which the excess of oil has been removed,

Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

TABASCO PEPPER SAUCE,

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced by connoisseurs to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY'S SON,

NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

ESTABLISHED IN LONDON, 1831.

DEAN'S PATENT Ardenter Mustard



W. G. DEAN & SON,

361 & 363 WASHINGTON STREET; 84, 86, & 88 NORTH MOORE STREET, N.Y.

AMERICAN ANALYST CLUB RATES.

WE have made arrangements by which we can furnish to our readers any of the periodicals named below at a club rate, with the AMERICAN ANALYST, at a considerable saving. Should any periodical not mentioned be desired, or several of the journals, drop us a postal card and we will give you a rate promptly. For sample copies address the publishers. Terms strictly cash, in advance.

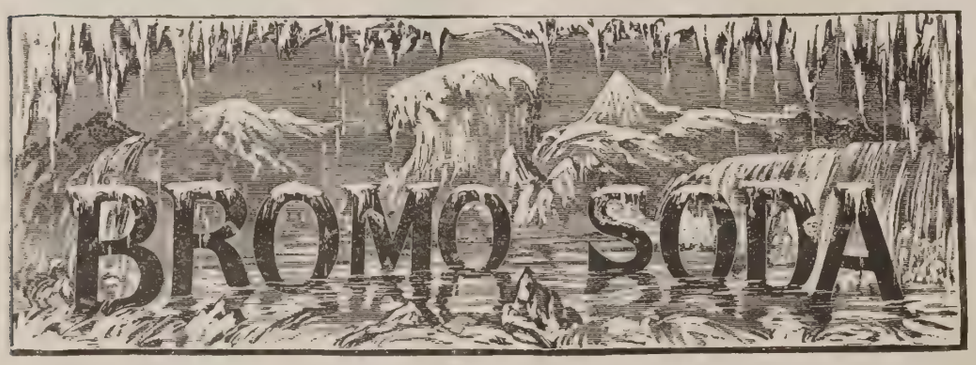
	Publishers' Price.	Our Price, including AMERICAN ANALYST, One Year.
Arthur's Home Magazine	$1.50	$2.35
Babyhood	2.00	2.50
Century Magazine	4.00	4.50
Christian Herald, N. Y.	1.50	2.00
Christian Union, N. Y.	3.00	3.50
Cosmopolitan Magazine (See our Premium Offer.)	3.00	3.25
Cottage Hearth	1.50	2.00
Current Literature	3.00	3.50
Demorest's Magazine	2.00	2.50
Family Story Paper	3.00	3.25
Farm and Fireside	.50	1.40
Fireside Companion	3.00	3.50
Forum	5.00	5.25
Frank Leslie's Illustrated Newspaper	4.00	4.50
" " Popular Monthly	3.00	3.50
Garden and Forest	4.00	4.25
Godey's Ladies' Book	2.00	2.50
Golden Days	3.00	3.50
Good Housekeeping	2.40	3.00
Harper's Bazaar	$4.00	$4.50
" Young People	2.00	2.50
" Weekly	4.00	4.25
" Magazine	4.00	4.25
Home Magazine (Mrs. Logan's)	.50	1.25
Judge	5.00	5.00
Ladies' Home Journal	1.00	1.75
Ledger, New York	2.00	2.50
Life	5.00	5.50
Lippincott's Magazine	3.00	3.25
Magazine of American History	5.00	5.00
New York Weekly	3.00	3.50
Our Day, Boston	2.50	3.25
Outing	3.00	3.50
Peterson's Magazine	2.00	2.50
Popular Science Monthly	5.00	5.25
Puck	5.00	5.00
Review of Reviews	2.00	2.75
Scientific American	3.00	3.50
Scribner's Magazine	3.00	3.25
Youth's Companion	1 85	2.50

ADDRESS THE ANALYST PUBLISHING CO., 19 Park Place, New York.

FOR THE SPEEDY RELIEF OF

NERVOUS HEADACHE AND BRAIN FATIGUE.

WARNER & CO.'S EFFERVESCING



Useful in Nervous Headache, Sleeplessness, Excessive Study, Over Brainwork, Nervous Debility, Mania, etc.

DOSE.—A heaping teaspoonful in half a glass of water, to be repeated once after an interval of thirty minutes, if necessary. Each teaspoonful contains 30 grs. Bromide Sodium and 1 gr. Caffein.

It is claimed by some prominent specialists in nervous diseases that the Sodium Salt is more acceptable to the stomach than the Bromide Potassium. An almost certain relief is given by the administration of this Effervescing Salt. It is also used with advantage in INDIGESTION, DEPRESSION following alcoholic and other excesses, as well as NERVOUS HEADACHE. It affords speedy relief for MENTAL and PHYSICAL EXHAUSTION.

PREPARED ONLY BY

WM. R. WARNER & CO.

MANUFACTURERS OF SOLUBLE COATED PILLS,

PHILADELPHIA AND NEW YORK.

Registered July 20, 1886.

PUBLICATIONS OF THE

ANALYST PUBLISHING CO.

THE AMERICAN ANALYST. Weekly. Every Thursday. $1 per year.

THE ROOFER AND TINNER. Monthly. 15th each month. $1 per year.

THE LEATHER MANUFACTURER. Monthly. 1st each month. $3 per year.

Reliable agents and representatives wanted everywhere on liberal terms. Address

ANALYST PUBLISHING CO.

19 PARK PLACE, NEW YORK.

GLENN'S SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,

C. N. CRITTENTON,

115 FULTON STREET,

NEW YORK.

IF you wish to advertise anything anywhere at any time write to
GEO. P. ROWELL & CO.,
No. 10 Spruce St., New York.

ARROWHEAD HOT SPRINGS,

CALIFORNIA.

I MOST respectfully invite physicians of the East to write to me for information concerning this famous Southern California resort. The hot mineral water mud baths, and climate are unequalled in America. Diseases of the throat, lungs, liver, stomach and kidneys, nervous and skin troubles and rheumatism, are the ailments successfully treated. The hotel contains 125 rooms, is first-class, and lighted throughout with incandescent lights. Elevation 2,000 feet. Address,

H. C. ROYER, M. D.,
Arrowhead Springs, San Bernardino Co., California.

The Family Herald,

ISSUED EVERY MONTH,

A CLEAN AND INTERESTING STORY PAPER,

FOR OLD AND YOUNG.

Single Copies, 5c. Twelve Months, 50c.

ADVERTISING RATES.

One page—4 Columns—48 inches,	$40 00
Half page—2 Columns—24 inches,	25 00
One column—12 inches,	15 00
Half column—6 inches,	9 00
One quarter column—3 inches,	5 00
One eighth column—1½ inches,	3 00

THE FAMILY HERALD,

124-132 CANAL STREET, CINCINNATI, OHIO.

"*Printers' Ink*," that great authority on advertising, says, "A well-made advertisement placed in a humorous paper is like a well-made hat. It wears well." "Results are often obtained after your advertisement has been discontinued for months. A humorous paper never dies. It is read and re-read by all the members of a family, and visitors find pleasure in perusing its columns."

WHY NOT

—OWN AN ILLUSTRATED NEWSPAPER—

TO ADVERTISE YOUR BUSINESS?

Did you know it could be done at moderate cost? Particulars and samples of humorous papers free to any responsible firm. **PICTORIAL WEEKLIES CO.**
28 West 23d Street, New York.

Mr. Gibbs, of the National Cash Register Co., says since publishing their own paper "The Hustler," their business has increased 300 per cent.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 51. NEW YORK, THURSDAY, DECEMBER 17, 1891. WHOLE No. 251

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - - $1.00 per year.
Single Copies, - - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.

Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.

Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,
H. LASSING, M. D., T. P. McELRATH, } *Editors.*
No. 19 Park Place, - - - - - New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

Animals' Speech 603
Chinese Wax 603
Cold Winter Signs 607
Domestic Dietetics 605
Editorials 601
English Railroad Lights; Electricity at Chicago; Explosive Stove Polish; The Food Exposition.
Evolution of Flowers 604
Human Effort 604
Right and Left Handed 605
The Columbian Exposition 606
Time at Night 607
Woman's Sphere 602

ENGLISH RAILROAD LIGHTS.

Whatever there is of comfort and satisfaction in railway travel is, like most other manifestations of modern progress, due to American inventive genius. On the other side of the Atlantic the old system of compartment carriages is adhered to, with little deviation, and the best of them are inferior in comfort and conveniences to the commonest of the parlor, boudoir, buffet or sleeping coaches, such as are found on nearly every passenger train in the United States. It is interesting to note the satisfaction with which the introduction of a plan for even the partial illumination of cars in England is greeted as a desirable novelty. We read in *Electricity* a description of an electric light scheme, operated on the "penny-in-the-slot" principle which has recently been placed in passenger carriages on some of the English railways. In Great Britain it is not an unusual sight to see the fortunate passengers by express trains who have secured corner seats, reading their books and papers by the light of a wax candle precariously secured to the window sill by some of his own wax. Railway lamps, on the principle of a small carriage lamp, with a pointed hook for attachment to the cloth lining of the car, are purchasable at most railway book stalls in England, and generally form part of the belongings of experienced travelers in that country. Mr. W. H. Preece, the well-known English electrician, has, our contemporary says, improved on the wax candle and the railway lamp. For quite a number of years he has carried with him a compact electric lighting outfit, consisting of a pocket accumulator and a small incandescent lamp enclosed in a miniature bull's-eye lantern. Comfortably settled in his seat he attaches the lantern to the top button-hole of his coat, turns on the current and obtains a perfect light on his papers, much to the wonder and envy of his less fortunate fellow passengers. The "penny-in-the-slot" electric railway light comes then as a boon and a blessing to travelers in the old country. Every one who has suffered from the intense aggravation of trying to read by a dim light can appreciate the ease and contentment which it affords to those who make use of it. The lamps are placed in convenient positions to throw a good light on the book or paper; to the side of the car is attached a box containing the accumulator and mechanism for switching the current on and off. By dropping a penny into the slot the light is set going for fifteen minutes, at the end of which time the circuit is automatically opened and the light extinguished. Eight cents an hour is rather a dear price to pay for light, but not everybody wants to read all the time while traveling, and if one wants to read very badly then the necessary light is cheap at any price.

ELECTRICITY AT CHICAGO.

The significance of the electrical feature to be displayed at the Columbian Exposition in Chicago, in 1893, is attracting extensive attention from the newspapers. The *Mail and Express* recently commenting on the transmission of electrical power 105 miles, from Lauffen to Frankfort, said that the day might not be so far distant as many supposed when the force of Niagara Falls would be employed to generate electrical power which would be conveyed and utilized over a vast area. Now we hear that it is proposed to drive the electrical exhibit at the World's Fair by electricity generated at Niagara. The distance is 475 miles. The scheme does not seem impracticable, in view of the Frankfort experiment. The idea is a grand one, and, if carried out, would do much to place the fair in the front rank of world expositions. The subject is further amplified by the *Electrical Review*, which predicts that electricity will be the feature of greatest interest and importance at the World's Columbian Exposition. The recent experiments in electric power transmission at the Frankfort Electrical Exhibition were entirely successful. It is but a question of detail to increase the distance over which power may be carried. From Lauffen to Frankfort is 108 miles. From Niagara Falls to Chicago is about 475 miles. Large turbines and generators at Niagara, a carefully protected and well insulated line of heavy copper, and a motor plant at Jackson Park, will do the business. Of course this project needs much money and careful engineering to bring it to full success. Inestimable benefit would accrue to electrical interests as a result of such a demonstration. As regards electric lighting, development in that line is so constant that it is well nigh impossible to predict what may be the state of the art when the World's Fair opens. We may see a building illuminated by glow lamps without circuit wires, after the plans of Mr. Nikola Tesla. Electric traction will probably be well nigh perfect by the end of 1892. Many bright minds are puzzling over the storage battery problem: it is an enigma which may be practically solved at any hour. The recent production by the Thomson-Houston Electric Company of an electric locomotive capable of drawing nine loaded freight cars is, indeed, an advance. It is undoubtedly the forerunner of an electric machine which may displace the steam locomotive. The underground conduit system of electric street railway propulsion is also in the field for future recognition. Visitors to the World's Fair will see applications of electric power for manufacturing purposes which will be truly astonishing. Our predictions are not the vagaries of a phantom prophet, but are beliefs founded firmly and solidly upon an abiding faith in that mysterious agent whose manifestations are so wonderful, and about which we have learned so much and know so little.

EXPLOSIVE STOVE POLISH.

In these days of dynamite bombs we find that equally serious dangers threaten our households, for some unscrupulous manufacturers, with only an eye to money making, have put upon the market a liquid stove polish which, being largely composed of benzine, petroleum, naphtha or wood alcohol, is said to evaporate rapidly, and leave the base of plumbago on the stove in such a finely divided filament as to produce a shining surface. To gain this questionable advantage over the old-fashioned dry stove polishes, tidy but unthinking housewives are induced to purchase and use these exceedingly dangerous liquid polishes. The following account of a shocking accident, which we take from a daily paper, serves as an impressive illustration: Mrs. Willett Marsh, wife of an artist of that name, living at No. 59 West Front Street, Plainfield, N. J., was disfigured for life by an explosion of stove polish to-day. She was polishing a stove with a patent liquid polish containing some volatile ingredient, when suddenly it exploded and the blazing liquid was scattered about the room. Mrs. Marsh's clothing was set afire, and in an instant she was enveloped in flames. Fortunately help was at hand, and the flames were extinguished as quickly as possible. At first it was feared that she was

READ PAGE 610.

fatally injured, but it is now thought her life can be saved. She will probably lose both hands, and her body will be terribly scarred.

THE FOOD EXPOSITION.

On the afternoon of Saturday, December 5th, the Food Manufacturers' Association held the first of their monthly press receptions at the Madison Square Garden. The object of the meeting was to bring before the press, and through it the public, the coming Food Exposition, and the benefits to accrue to the city therewith. The Association, which numbers among its members companies and dealers from Boston, Rochester, Chicago, New Orleans, New Haven, Pittsburg, Willmington, Philadelphia, Dover, Cincinnati, Providence and other cities, proposes holding in October, 1892, an exhibition to promote the manufacture, sale and consumption of wholesome food products, to establish close, cordial, and confidential relations between the manufacturer, distributor, and consumer, and to enlighten and educate the public as to the importance of using the best quality of food. It is not intended to establish a food inspection or analysis, but simply to stimulate the production of higher grades of food products by appeals to the public whom they consider the best judge and jury in such matters. Although the exhibition will not be held for a year, space has already been allotted to forty-seven leading firms, and the success of the fair is a foregone conclusion. The officers are: E. C. Hazard, President; Read Gordon, First Vice-President; Alphonse Biardot, Second Vice-President; W. G. Dean, Treasurer; Daniel Browne, Secretary. The Board of Directors comprise: E. C. Hazard (E. C. Hazard & Co.), Read Gordon (Gordon & Dilworth), Alphonse Biardot (Franco-American Food Co.), Geo. P. Tangeman (Cleveland Baking Powder Co.), B. J. Shafer (Joseph Burnett & Co.), W. G. Dean (W. G. Dean & Son), John Holmes (New York Biscuit Co., New York), E. C. Rich (E. C. Rich Co.), Edward Elsworth (the Clover Mills), A. D. Rohrer (C. J. Van Houton & Zoon), N. R. Cottman (Alexander Eyquem), Robert M. Floyd (S. H. Street & Co.), Daniel Browne.

WOMAN'S SPHERE.

WHAT SPECIAL CULTURE BEST FITS WOMAN FOR LIFE'S DUTIES?

The meeting of "Sorosis," on December 7th, was a very interesting affair. Besides the regular members there were present many guests of note, including the wife of Max O'Rell, the wife of Bishop Simpson, the wife of Col. Roebling of Brooklyn Bridge fame, Mrs. Davis and Mrs Dickinson of the King's Daughters, Mrs. Scrimgeour, Mrs. Bailey of Orange, Miss Dennis, one of the World's Fair Commissioners; Mrs. Thomas of the Orange Woman's Club, Mrs. Cogswell, Mrs. McElroy, Mrs. Mary A. Kidder, and Constance Howard (Mrs. Stowe). When these guests had been duly presented and the preliminary entertainment of music and recitation had been duly applauded, the Chairman of the day, Mrs. Margaret T. Jardley, presented for the discussion in which Sorosis delights the very practical question: "What kind of education will best fit women for the duties of life?" Very briefly the Chairman pointed out and classified the duties of a woman's life as religious, personal and social, adding: "Our personal duty that we owe ourselves, that we may make the best of ourselves, is to be chaste, temperate, truthful, brave, and free in the condition God intends for men and women. Our social duty is simply the broadening out of our personal duty to our families, our neighbors, society, the State, and the country. Social duty is the fulfilling of the law, to do unto our neighbors what we would have our neighbors do unto us with love in our hearts." Jenny June presented the advantages of a literary education as a preparation for woman's duties, not as a professional means, by which to make a livelihood in writing or teaching, but for its discipline and development of all faculties; first, in the knowledge of the signification and value of words resulting in correctness in their own and their children's speech, accuracy of statement and distaste for exaggeration, which is first cousin to falsehood; second the cultivation of taste, which will not tolerate the false and worthless rubbish which passes current in paper covered novels, where paper men and women revel in fine millinery, and an utter disregard of language or logic. It commands rather the society and communion of the best writers as a stimulus to latent intellectual powers and heroic purposes and higher ideals. Women have special sympathy for this culture for culture's sake, and special use for it in the family and society. Men are of necessity given up to business and depend upon women to furnish the intellectual and spiritual side of life. Literary culture tends to foster a spirit of exclusiveness and carefulness in choosing associates. It removes from women the curse of poverty, which is ignorance, narrowness, prejudice, and endows us with the refinement and breadth and beauty of a better world, where the pin pricks of daily life cease to hurt us, and we have the great and noble for personal friends, who care nothing for the cost of our dwellings or whether we entertain handsomely or simply. Mrs. Jennie Lozier, the President of Sorosis, advocated the importance of medical or physiological study as a preparation for women's duties, because the peculiar duty of woman, one she cannot relegate to any one else, is the care of her children, and the indispensable preparation for this duty is health for herself, and health to transmit to her offspring, and such knowledge as shall enable her to retain it for both. Heredity, although a potent factor in the product of health, is not fatality. Its complement is environment. Health is not a positive quantity. It is, like beauty, a harmony. Symmetry is the law of its development, and education must be directed to the whole or we shall have monstrosities either intellectual or physical. You cannot play a harmony with one finger. The harmony which thrills from the harp of life seems to come from five strings—nutrition, respiration, activity, sustenation, and cerebration, and the essential woman's knowledge is that which governs the best development of these elements in her child. It is surely no insignificant sign of the times that sickness is no longer fashionable, and we do not now 'enjoy poor health.' In the smaller towns girls have fainting fits and matrons break down with nervous prostration. The city women are plump, rosy, and strong in comparison. It seems that the country women are killing themselves with strong tea and mental vacuity. The occupations and excitement of city life are tonic to our brains and nerves, but we must remember that every tonic has its corresponding depression and may be abused. Activity and rest should alternate in due proportion and mark the rhythmic harmony of health." Mrs. Terhune (Marion Harland) argued the domestic education as pre-eminent in importance to women, and that while the morals of the community and the integrity of the nation depend upon the manner in which the home is kept, a practical knowledge of what underlies home comfort is absolutely essential to a well-equipped woman. In the present condition of trained labor and the system of domestic service no American girl can afford to be ignorant of the humblest details of what is popularly known as housework, otherwise she is at the mercy of her servants. It may sound like bald realism to say that conjugal devotion depends largely upon how the family steak and potatoes are cooked and served. But when we consider the intimate relations of body and mind, the theometric influence of the digestive organs upon the spirits, the realism rises into the dignity of a moral axiom. Shall we not concede an honorable place to that training that instills punctuality, thrift, and helpfulness, that makes a girl robust in body and in mind, that fits her to fill with honor the place of housewife and home-maker, and to set upon her sons and daughters the imprint of a noble and beneficient personality? Mrs. Ella Dietz Clymer said that she would answer the question in a single sentence, for the kind of education that best fitted a woman for her duties was the education of the heart. Carlyle says a "loving heart is the greatest teacher," and a loving heart is in a woman's life the foundation stone upon which the superstructure should be built. Portia, inspired by her great love, went into the court and saved her husband when wisdom had failed to win his case. Choose your life work and let that educate you. In loving service our natures are trained, disciplined, and educated. Expansion of sympathy enlightens the mind, and the education of the heart is necessary to a woman in fulfilling her whole duty to God and to mankind. This simple little speech received more applause than did any that preceded it. Then Lady Somerset spoke in her rich, melodious English voice, and after thanking Sorosis very graciously for the pleasure and profit derived by the stranger guest at the meeting, Lady Somerset said: "The world is waking up to the great difference between woman's position now from the position she formerly held. No one would dare utter now in public the prayer of the old Scotch minister. 'We thank thee, Lord, that thou hast given us women to make us comfortable.' The old order changes, and woman's education embraces a wider outlook than ever before. In considering the question of woman's sphere and the kind of education which shall best prepare her for its duties we must look upon her as a life giver and a law giver, of which the first is paramount. Many of the ills flesh is heir to might be overcome and obliterated if this idea could be kept before women. The most sacred duties of life are presented to people when they are poorly prepared to find the solution of its problems. The mother's education is a sort of moral tobogganing. The children are sent out into world to land where they will. But we have passed beyond the old idea that ignorance is innocence and knowledge necessarily vice. It is the duty of every mother to gather her girls around her and tell them all they should know, all God meant for them. It is her duty to do this in fidelity to her husband and faithfulness to her children. And of woman as a law giver, not entirely in a political sense, for woman makes the laws, sets the tone, creates the morals of society, and any education that fits her for this is the best she can have. The moral tone of the world hangs upon the moral tone of its women. Politically English women seem to be in advance of American women. Pardon me if I err in my opinion. When all women realize their power they will not tolerate the evils of the present—will not allow the public work of the statesmen to give the lie to their private lives. They will demand that men shall be good and pure even as women are brave and true. Until women take an intelligent interest in politics the best men will stand aloof from political work. Let every mother influence her sons for the best and noblest, and through them she shall influence cities and countries. The least education is, indeed, the true education for women, for it is love that sends us out into this great weary world to try to make it better and brighter for our having been here." Mrs. Eva Douglas talked of education by travel, and concluded that if a woman was going to lecture she couldn't circle the globe too many times, and always with a camera strapped over her shoulder, as illustrated lectures were most popular. But if she was to mother a large family of children she would be better fitted for her duties if she didn't travel at all, for the fascination for journeying strengthened with every trip, and would disturb her tranquility and peace of mind. Mrs. Septima M. Collis read a long and humorous paper on the topic of social education, wherein was couched much sense in nonsense, and were told many truths under cover of keen sarcasm. The chief essentials of social success were beauty (of which its owner must feign

ignorance); cleverness and intellectual gifts (but the clever girl, if she would be popular, must seem always to be acquiring wisdom from every friend, never to be giving knowledge to a friend); and accomplishments which she was always to be generous in sharing with her acquaintances but never anxious to exhibit. Finally, the greatest of these three was the divine gift and grace of tact. "The woman who would shine in society must let society shine on her. She can give no light to it unless she absorbs its light. It is friction with the world which brightens the metal that is in her and keeps her young; absence or indifference dulls the appetite, rust surely follows, and she finds herself with the rest of the rubbish on the upper shelf, forgotten and unmourned. Nothing but physical infirmity serves as an excuse for a talented woman's withdrawal from the world of women Even bereavement has allotted to it by custom only its brief period of mourning."

ANIMALS' SPEECH.

SOME CONJECTURES ON THE MENTAL PROCESSES OF AMIMALS.

In our issue of July 30 (page 364 of the present volume), the readers of the AMERICAN ANALYST were informed of the experiments now in progress by Prof. F. L. Garner to detect in the utterances of monkeys an intelligible means of communication. An editorial writer in the New York *Times* of November 29 says on this subject: The orang outang of Lord Monboddo was introduced into scientific circles by Lamarck at the threshold of the century, and became much later a popular figure under Charles Darwin. It may be recalled how Thomas Love Peacock made him a "striking" character in fiction when he wrote "Melincourt" and described Sir Orang Haut-ton, the speechless, who obtained a baronetcy and a seat in Parliament, notwithstanding his inability to articulate. In the interim between Lamarck and Darwin, the writer of grotesque German tales, Hauff, followed Peacock with the same idea, but with a German, not an English, setting and satire. Both may have pondered the passage in "Origin and Progress of Language," which says: "In general, I believe it will be very difficult, or rather impossible, for a man who is accustomed to divide things according to specific marks, not individual differences, to draw the line between the orang outang and the dumb persons among us; they have, both, their organs of pronunciation, and both show signs of intelligence by their actions." It has taken about a century to place an idea which seemed so ridiculous that it was seized upon as stuff for satires well within the limits of attainment. The instruction of the deaf and dumb reaches a point when articulate sounds can be taught to those who cannot hear them, and the faintest changes in vocal expression can be stored up in an instrument and repeated by that instrument as slowly as wanted. At the same time it has become clear that animals can be perfected in other directions than those on which they have been improved hitherto. We breed horses for speed and color, dogs for speed, for specialties like pointing and retrieving, and for their color and temper, birds for their voices and looks, cattle for their milk-giving or other qualities. But so far we have not bred animals with an eye to general intelligence, having been stopped by ignorance of any fixed and intelligible method of communication with them, which might also be used between beast and beast for their further advance. Now, however, we have glimpses of a speech for animals. The chief difficulty, remarks Prof. E. P. Evans in the *Popular Scientific Monthly*, attending the investigation of mental processes in animals, is that they cannot express themselves in human language and explain to us their thoughts and feelings and the motives underlying their conduct. "We are thus liable to misinterpret their actions and deny them many endowments which they really possess, just as the first explorers of new countries fail to discover in savages ideas and conceptions which are afterward found to characterize them in a remarkable degree." It may be remarked that primitive peoples granted far more intelligence to beasts than we are disposed to do, and very commonly made them the incarnation of spirits. In the Middle Ages the classical story of Gellert emphasized the drawback under which the most intimate friend of men among four-footed beasts labors through lack of speech. Gellert was the faithful hound of a Welch Prince that killed a wolf in defense of the Prince's heir, and, supposed to have torn to pieces the child, was slain by the Prince because speech was lacking to inform his master where the babe lay safe. It is indeed hard to believe that the dog intrusted with articles to keep, like the mongrel in the grocer's cart, or accustomed to patrol the passes like the St. Bernard, or sent to the corner store for parcels and letters like a thousand dogs of different breeds, or trained to read blocks, walk on their hind legs, sit at table and use knife and fork—is not a rational being like a small child and cannot be developed by a course of training and careful breeding into an animal far superior to the best of the canine race to-day. At any rate, there is a liklihood amounting almost to certainty that we can discover methods of communication with animals that will greatly increase the pleasure and profit derived from them and save them from much suffering. Prof. Graham Bell even believes that dogs may be taught words, and while noting that Leibnitz had the same belief two centuries ago, Prof. Evans points out that a language will be to the dog of incalculable value as a means to enlarge the animal's sphere of thought. It is possible that a step in the right direction has been made in this country by Prof. Garner, who thinks that he has discovered that certain sounds uttered by monkeys are understood by them to mean certain definite things; or, at any rate, certain categories of ideas. His experiments have created much surprise and interest in Europe. According to recent reports, he proposes to visit Central Africa in order to study the sounds made by the great tailless apes, gorillas and chimpanzees, which are generally considered animals on as high a level as any in the world. By some they are placed on the same level with dogs, by others considerably above. Prof. Garner is certain that the uttering by him of a sound which, he was led to believe, suggests to monkeys the idea of peril, death or bodily harm, has been followed by signs of abject fear in a number of monkeys with which he has experimented. Very naturally there is room in such experiments for a wide margin of mistake. The monkeys may have been frightened by something in his attitude or tone. And it is certain that Prof. Garner's latest reports tend to widen the category of ideas to which the baleful word in monkey language may apply. Nevertheless, there is much to be learned from such experiments, though nothing be discovered that could properly be called a language, and though little more than cries such as we know most animals use reward the patient student for his labor. In the days of the cave-dwellers mankind did not feed and ride the horse, but simply slew and ate it. Since domestication the horse has had its innings by killing a goodly company of human beings every year. Yet, in truth, it is no malignity in the noble animal that causes the greater number of fatal accidents; it is the beast's lack of brains, for which men are partly to blame. They do not keep horses in such a way as to encourage what small brains they possess; and very commonly they do not know the horses they ride and drive. With the perfecting of animals for brains as well as brawn, the horse may be remembered. Perhaps the day may come when Yahoos and Houyhnhums will approach each other, and the centaur, that ancient forecast of an improvement on man, shall have a closer imitation than we find in the modern equestrian.

CHINESE WAX.

THE CURIOUS WAY IN WHICH IT IS COLLECTED.

"The most interesting article of all the many curious things which enter into the trade of China is 'insect wax,'" writes Minister Denby from Peking to the Department of State. "This product, sometimes known as 'white wax,' is obtained in western China, not far from the frontier of Thibet. It is gathered from a tree called by the natives the 'crackling flea tree,' from the popping of its branches when burned. The tree is an evergreen, and in the spring it bears clusters of white flowers, which are succeeded by fruit of a dark purple color. Botanists have classified it as *ligustrum lucidum*. Early in May numerous brown, pea-shaped scales appear on the bark of the bows and twigs. These, upon being opened, are found to contain a mass of small animals, resembling flour in appearance, whose movements are almost imperceptible. The animals are the larvæ of the white wax insect which owns the scientific name of *coccus pe-la*. People gather the scales and carry them to the Prefecture of Chia-ting, which is the centre of this industry. For the journey they are wrapped in packages containing about sixteen ounces each. The utmost care is taken to protect them from heat, in order that the larvæ may not develop prematurely. The city of Chia-ting stands in the midst of a plain which is an immense rice field. The plots of ground into which this vast field is divided for purposes of cultivation are edged with stumps from four to twelve feet in height, bearing numerous sprouts upon their gnarled heads. These stumps resemble at a distance pollard willows. The trees, however, are a species of ash, and are called by the Chinese 'white wax trees.' Beneath their branches the white wax scales are suspended in small packages wrapped in leaves, about twenty or thirty scales in each package. Holes are punched in the leavy wrappings, and the insect on emerging from the scales creep up the boughs to the leaves of the trees, among which they remain for two weeks. At the end of that time they crawl back to the twigs and branches, on which the females deposit their eggs and the males excrete the substance known as white wax. The first appearance of the wax on the under sides of the boughs and twigs resembles snow, and it gradually spreads over the whole of the branches to the depth of a quarter of an inch. At the expiration of 100 days from the placing of the insects on the trees the deposit is complete. The branches are then cut off. As much of the wax as possible is removed by hand, but to secure what remains the branches are afterwards boiled. This boiling destroys the eggs, thus making necessary the bringing of fresh scales the following year from another locality, as above described. A pound of scales, it is said, will produce four or five pounds of wax. The wax scraped off is put into boiling water, where it melts, and rising to the surface, is skimmed off and put into moulds. Here it solidifies and the work of manufacture is complete. The insects, which have sunk to the bottom of the pot, are pressed out, and, when the wax has all been extracted from them, are fed to the pigs. A ton of the wax is worth at Shanghay about $1,000. A tree from which the branches have been removed is not available again for productive purposes until the third year following. If the wax is left on the tree, the male insects buried under it undergo a metamorphosis, emerging with wings in the autumn and flying away. This white wax is a substance of great utility in China. It melts only at a very high temperature, 160 deg. Fahr., and is chiefly employed to cover candles made of animal and vegetable tallow, to prevent them from burning too rapidly. It is used in some localities as a sizing for paper and cotton goods, a glaze for silk, and a polish for furniture. Also it is utilized in southern China as a polish for stone ornaments. Immense quantities of it are shipped from the ports of the upper Yang-tse in junks. The intro-

duction of foreign kerosene, now so universally used in China, has had a discouraging influence on the production of 'insect wax.' Mineral oil in lamps affords a cheaper light than tallow candles. It is possible, however, that a use for the product may be found in other countries."

HUMAN EFFORT.

WHAT ENGROSSES THE MINDS OF THE ACTIVE HALF OF THE WORLD.

When it is pointed out that an alleged half of the world doesn't know how the other half lives, the speaker is apt to wear a wiseacre air characteristic of the thoughtful person. What is always meant by the remark is that the speaker himself professes not to know much of the daily life of the very poor or the socially predaceous. But there remains still a full half of the world of whose life it is safe to say that the supercilious fragment knows even less than it does of that of the very poor. This remaining half is so astonishing in its activity that a glance at it can scarcely fail to minister to the pleasure of our readers. Sweeping this active half of the world, then, with a glance, we perceive it engaged in figuring up the piston surface for a pumping engine and the diameter of an aqueduct pipe; tracking the bug to his lair and destroying his egg, exterminating mosquitoes and measuring earthquakes; making new probes to pull things out of folks' ears with; modeling creatures in clay and carving them in stone; designing World's Fair buildings for Chicago, and other buildings for Madison and uncounted other squares, and Cathedrals for New York; measuring the women's diaphragms to show why their noses are red. Disinfecting sewage and disengaging aluminum; intercepting the floating germ and setting him to slay the innocent rabbit; finding drugs whose tremendous potency mocks even the purple fluid in the apothecary's shop window; ridden by nightmares and fashioning women's garments after the vision; speeding house elevaters and testing timber trees; determining the course, S. E. and by S., half S., which Sirius was sailing nine years ago when the light we get to-day set out from him; trying new crosses of blood for race horses and fantail pigeons; painting impressionist pictures and composing music of the future and telegraphic cipher codes while mad-houses and suicides' graves multiply on every hand; applying liquid fuel and improving screw propulsion; identifying Sing-a-Song-of-Sixpence with the funeral chant over the body of Patroclus. Finding out how cold the moon is, why water feeds the flame of burning oil, and observing the effect of electric light on trees, keeping them awake; photographing a wink and tracing the history of rain gauges; devising apparatus to test the adulteration of wine, and adulterants to beat the apparatus; devising better material for underclothing, new models of yachts, binnacles and oil-serving swabs to still storm waves and improve methods of brewing beer; devising dynamite guns, mill worker's homes, and glue that doesn't unstick; determining the apex of the sun's way near Lyra and not Hercules; trisecting an angle and recording the chemical life history of Jerusalem artichokes. Sounding the sea, hatching fish and finding out what kills the oysters; making butter out of petroleum and honey out of shingles, with by-products which smell like a cow's breath and blow up with forty thousand horse-power; identifying the rheumatism microbe and subcutaneously injecting heart juice for heart failure; poisoning marine worms, propelling bicycles by electricity and making submarine torpedoes out of paper; making folks wash themselves; proving by mathematic demonstration that the vortex atom is the one thing in the universe that really does exist, when along comes Edison, saying the atom knows good and evil, just like folks. Raising ghosts and ghostesses, inventing chess problems for gain, and getting real money for treatises on grammar, on the immortality of the soul, on the moral purpose of Shakespeare's plays and of Walt Whitman's style, and diagnoses of Byron's club foot and Richard III.'s abnormal spine. These are some few and very few, of the ways by which that stirring half of the world, which is neither very poor nor thoughtful, actually lives. Is it to be doubted that the fragment which titters to confess it does't know how the poor half does live, commonly knows even less about how this ingenious half is living and what it is living for?—*N. Y. Sun.*

EVOLUTION OF FLOWERS.

HOW FLORAL FERTILIZATION IS EFFECTED BY INSECTS.

At a recent meeting of the Pharmaceutical Society Prof. J. B. Green read a paper on the above subject, of which we append the following abstract: "The flower has a special importance to us in studying the life history of the plant. It is the indication of its endeavor to discharge the second of the duties of the organism, the preservation of the species, or the propagation of the race. It consists of parts whose meaning is only evident when regarded from this point of view. On a stalk there are superposed successive whorls of modified leaves, known as sepals and petals, and within this two other whorls the stamens and pistil. Of these the stamens develop, in their club-shaped heads or anthers, a number of grains of various forms, known as pollen, which give rise to what is the male element in reproduction. The pistil, or collection of carpels, develops the ovules, in which we have the female cell ultimately produced. The problem of reproduction involves the transference of pollen from stamen to carpel in an organism which itself is passive and motionless. The pollen must reach a particular portion of the carpel known as the stigma, which is usually its uppermost part, and here the changes leading to fertilization are initiated. It has been found by Darwin and others, in long continued experiments, that the best offspring is produced when pollen from one flower is applied to the stigma of another flower, either on the same plant or on another plant of the same species. This cross-fertilization, as it is called, has given rise to curious and interesting mechanisms to secure it. The original flower was probably one of a very humble type, such a one, indeed, as we now find on our forest trees. It had no particular color, and was not conspicuous among the foliage. It produced large quantities of pollen, and was often provided only with stamens or with pistil. It was fertilized by natural agencies, of which the wind was the most usual. From such a type the various highly colored, scented, and curiously shaped flowers we now know have been developed. In the order of such development the aid of the insect world has been prominent. To effect the change from wind fertilization to insect fertilization is the initial difficulty; that once effected, various modifications would soon ensue, and those that were advantageous to the plant would be preserved by natural selection. Now, insects are largely feeders on pollen, and it is easy to see how the vast amount of pollen produced by such a flower would attract an insect to visit it. The successive visits of the insect to various flowers would result in the deposition of pollen from one on the stigmas of the others, so that the first insect fertilized or entomophilous flower would arise. It would be in character such as would be due to the influence of quite a short-tipped insect with a feebly developed sense of color. We find instances of these still existing, quite simple in structure, wide open, regular in shape, and offering only pollen to the insect, and either white or yellow in color. But many flowers offer another attraction than pollen, in the shape of honey. It is not uncommon to find honey secreted by other parts of the plant than the flower. If we suppose that this secretion of honey at some time came to be poured out on the flower, such a flower would have an increased attraction for an insect—and this property, possibly arising accidentally at first, would be perpetuated, and so the nectary come to be a regular part of the flower. A further development would follow in the shape of various mechanisms for the shelter of the honey from rain, and so lead to its being hidden in tubes or spurs, and accessible only to particular insects. The development, so briefly sketched out, has not proceeded along one line. Many visitors have been attracted by flowers, and each has led to particular modifications. I shall to-night consider only two of these—the fly and the bee. The fly is an insect of a low order of intelligence, shy and lazy. It is attracted both by pollen and by honey, and the structure of its mouth enables it to eat both of these. Its peculiar characteristics have led to the development of flowers, which secure it in a kind of prison, and retain it for a few days, ultimately releasing it. Such are the flowers of aristolochia and arum In both these the fly enters by pushing past a fringe of hairs which are set at an angle inclined forward. The insect is by these prevented from going out. The stigmas of the flowers are ready to receive pollen on its entrance, and if it has emerged from another flower it is dusted with pollen, which, as it crawls over the stigmas, it leaves behind it. After a day or two the stigmas in the prison fade, and the anthers ripen and discharge their pollen, with which the visitor becomes coated. At this time the hairs wither and the fly is enabled to escape, and to visit other flowers, where the same programme is repeated. The low intelligence of the fly is taken advantage of by the so-called grass of Parnassus. In this a number of shining knobs are developed in a part of the flower near the stamens, and from a distance these look as if coated with honey, and the fly, deceived thereby, visits flower after flower and effects fertilization. A higher type of flower visited by flies is seen in Veronica, where honey is hidden in a small tube in the centre of the flower. To reach it the fly is obliged to hold on by the stamens, and in so doing it dusts its body with pollen, which, on a visit to another flower, is deposited in the stigma, this being so placed as to touch the insect before the stamens do. The conspicuousness, however, which first attracted the fly also attracted other insects, whose visits did not always lead to the desired end. Even highly organized flowers still suffer from this disadvantage. The flowers of the columbine, oxlip and bean are still visited by short-tongued bees, which cannot reach their honey in the legitimate fashion. These bite holes in the petals and steal it without benefiting the flower. We have to look to this fact for the explanation of arrangements to protect the flower from these depredators. We have these, seen best in the so-called bee-flowers. Bees as a class of insects are characterized by more intelligence and greater industry than flies; they have a higher color-sense and a more complex mouth. With these endowments we correlate the fact that, unlike flies, they store up food for their young. Some of the more interesting types of bee-flower are seen in the leguminosæ, where elaborate mechanisms lead to the dusting of the visitor with pollen on the part of his body to which the stigma of the next flower must be applied. In lotus the pollen is forced out of the flower by a sort of piston, made of the dilated ends of some of the stamens. This is made to work by the weight of the bee when it alights upon the flower. In the broom the same effect is secured by a sort of explosion, which takes place when the bee commences its search for the honey of the flower. In the violet a curious cup-like hinged projection has been developed, which opens as the tongue of the bee, coated with foreign pollen, passes down the tube of the flower, but closes and covers up the stigma, when it is withdrawn carrying pollen from the flower's own stamens. In the barberry and in the corn-flower the stamens have become endowed with a peculiar irritability, which subserves the same purpose of dusting the visitor with pollen. In salvia, the sage, a curious modification of part of the stamen into a lever leads to the pollen falling on the

back of the bee, where the stigma of the next flower visited finds it. The various forms of orchids introduce us to still more elaborate mechanism, rendering fertilization without insect aid impossible. The development of color in flowers, and the explanation of the various markings on the petals, must be studied also in connection with insect life. Probably white and yellow flowers were the earliest, the first distinction being drawn thereby between flower and foliage. These were visited, probably, by lowly forms of insects, as they are to-day. When honey began to be secreted and hidden more distinctiveness was needed, and the insects with a high color-sense became the agents of further modification. The markings on the petals, usually straight lines or rows of dots, pointed the insect to the part where the treasure lay. So the development of blues and reds accompanied the evolution of the elaborate mechanisms already described. Of lowly forms, with easily accessible honey, Muller has shown 60 per cent. are visited by flies, as against 3 per cent. by bees—while of reds and blues it can be noted that the reverse obtains. Flies visit yellow or white flowers more than twice as frequently as red or blue ones."

RIGHT AND LEFT HANDED.

SOME CONJECTURES AS TO THE CAUSE OF THE HABIT.

Man is not only a biped without feathers, according to the definition of Plato, but is also the being which possesses the best organized, the most supple, the most adroit hand; and it is almost impossible to give an adequate idea of the exact part which this hand has played in the history of civilization. While, however, the hand is an admirably supple and varied tool, we know that of the two copies of that tool which every human being possesses, the one has a notable advantage over the other. Why? This question has been often put. The discussion about it is still going on and will doubtless last for a long time to come. What cause favors the right hand, and what determines occasionally the preponderance of the left hand? With the discussion of these questions Sir Daniel Wilson, President of the University of Toronto, has filled a volume of more than two hundred pages. To establishing the fact of the immense preponderance of right-handedness now and in past times, he seems to us to have given more space than is necessary. According to the anatomist, Hyrtl, of Vienna, the proportion of left-handed people among the civilized races of Europe is two in a hundred. Sir Daniel, who is left-handed himself, regards his left-handedness as congenital; but while some have from birth a marked inclination to use one hand, others have an equally marked inclination to use the other; among the majority, however, there is no very marked inclination either way, and their right-handedness is the result of education. Incessantly parents direct their children to use the right hand rather than the left. As soon as the child begins to use his hands to gratify his wants, he is taught to take his spoon in his right hand. Besides the structure of very many articles makes the use of the left hand awkward. Later on, children are taught to write with the right hand, which receives a special education by the occurrences of each day. Sir Daniel Wilson himself, he tells us, has learned to write with the right hand, without finding any particular difficulty therein. He uses the left hand, however, to write on a slate, or when he uses chalk, or his penknife, and his brush. He holds his spoon and his table-knife in his right hand; but when he is tired or has a bit of meat hard to cut, he instinctively takes the knife in his left hand. If he desires to use more than common force—as to drive a nail or give a blow with the fist—or if he is doing something which requires extraordinary delicacy, he makes use of the left hand. Among famous left-handed people some deserve special mention, as, for instance, Leonardo da Vinci and Holbein, who have demonstrated by their masterpieces, that the left hand is naturally in no wise inferior to the right. Let us admit with Sir Daniel Wilson that, outside of the majority with whom right-handedness is a matter of education, there is a minority with whom right-handedness and left-handedness is the result of a very strong and persistent natural tendency. What is the cause of this one-sided tendency; why does it vary, and why is it not found in every human being? In the answers to these questions theories abound. Sir Charles Bell attributes right-handedness to the greater force of the right side of the body. Is this force, however, a cause or a result? Does the right hand predominate because it is more used, or is it more used because it is naturally predominant? Others say that man is right-handed when his viscera occupy the normal position, and that he is left-handed when there is a transposition of the viscera, because the transposition favors the circulation of the left side. To this theory there is but one objection, which is that the theory is not justified by the facts. Mr. A Buchanan, Professor of Physiology at Glasgow, in 1862, proposed a theory of the predominance of the whole right side and not of the hand alone. According to him, right-handedness is not congenital, but acquired by reason of the greater force of the right side, the force being due to greater weight of the intestines on the right side of the body, the centre of gravity of the human organism being nearly above the right foot. His argument is not very clear and, therefore, but moderately persuasive. The anatomist, Hyrtl, of Vienna, has proposed still another theory, which attributes right or left-handedness to the disposition of the great arteries which spring from the aorta. There remains the theory of Gratiolet, who a long time ago, found an explanation of left-handedness and right-handedness, not in the hand or the arm, or the structure of the body, but in the general centre of the activity which belongs to nervous elements and tissues, in the brain. This French *savant* explains right-handedness by the anatomical and physiological preponderance of the left brain, which, according to him, is developed more quickly and more completely than the right hemisphere, doubtless by reason of its better sanguinary irrigation. The fact of the superior weight of the left brain is incontestable, although Wagner and Thurman deny its habitual preponderance. On the other hand, the left side of the body is the weakest and most subject to disease. It is known that the function of language belongs more particularly to the left brain, and it would be not at all surprising if the right side of the body, in its relations to the left brain, owes its superiority to the greater powers of the left half of the brain. This theory of Gratiolet has so strongly impressed Sir Daniel Wilson that he has requested that his brain be examined, when he has finished his career. He is convinced that it will be found that his right brain is superior in weight to, and different in structure from, his left brain, as was shown to be the case with an inveterate left-handed man who died in 1887, and whose autopsy was made with special care in order to ascertain its bearing on the question here under discussion. It will be seen that the reason for right-handedness and left-handedness is not yet completely discovered. In our opinion, however, that truth will be found at the end of the road opened by Gratiolet. Many problems much more difficult in appearance than the one here discussed have been solved, and it would seem that with the resources offered by the hospitals the documents necessary for its solution can be collected.—*Revue Scientifique.*

ELECTRICAL ADULTERATION.—Her Kochler, of Berlin, recently made a statement before the Bavarian Society of Applied Chemistry, that during a visit to the Strasburg Exhibition his attention had been attracted to the remarkably beautiful green color of some preserved beans. Inquiry as to how this was accomplished elicited only the information that it was a trade secret. He subsequently learned, however, that during the boiling of the vegetables in question in a copper vessel an electric current was passed through the whole, the vessel itself acting as an anode, and that in this way large quantities of copper was carried into solution to which the fine color was due. —*Electricity.*

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

December.

MEATS.—Beef, mutton, pork, venison, veal.

POULTRY AND GAME.—Chickens, fowls, duck, geese, turkeys, grouse, capons, hare, partridge, pheasants, rabbits, pea-fowls, guinea-fowl, snipe, widgeon, wild ducks, woodcock.

FISH.—Brill, carp, cod, crabs, perch, salmon, smelts, soles, sprats, tench, turbot, whiting, halibut, sturgeon, oysters.

PRACTICAL RECIPES.

BEEFSTEAK PIE.—Take a deep baking-dish, butter it, and line it with thin pie paste. Cut the bone out of a beefsteak, remove all fat and gristle, and cut the meat into pieces the size of your palm; beat each piece with a rolling-pin. Slice some white potatoes, put a layer of meat in the dish, then seasonings of salt, pepper, nutmeg, allspice, a little catsup and onion; put in a layer of potatoes, and over them some bits of butter; add another layer of meat, and then one of potatoes; pour in a little water. Cover with a crust and bake for an hour.

PICKLED TONGUE.—Rub a beef's tongue with a pound of fine salt, one ounce of saltpetre, and one half pound coarse salt; rub it well, and turn it in the pickle every day for two weeks. This pickle will do for several tongues by adding more fine salt.

VEAL PATE.—Chop three pounds veal cutlet very fine with a slice of salt pork, two eggs, broken in after the meat is chopped, six soda crackers rolled fine, a lump of butter the size of an egg, a teaspoonful of salt, cayenne and sweet herbs to taste. Mix the whole thoroughly, make up like a loaf of bread, and smooth the top over with melted butter, and bake thoroughly in a moderate oven. Let it get cold before cutting, then slice thin and serve.

ONION CUSTARD.—Peel and slice ten or twelve white onions, and fry them for a moment, until tender, in fresh butter, draining them well as you take them up; mince them as fine as possible; beat four eggs until very thick and light, and stir them gradually into one pint of milk in turn with the onions; season the whole with grated nutmeg, pepper and salt, and stir it hard; then pour it into a deep dish, and bake for about fifteen minutes. Serve as a side dish to be eaten with poultry.

RAISIN BREAD.—Two pounds flour, one pint sugar, one pint raisins, half pound of butter, five eggs, one cup yeast, one cup milk, one nutmeg, salt. Mix part of the flour, milk and yeast at night to rise, and work in the other materials in the morning.

BREAD DOUGH MUFFINS.—Take about as much dough, after it is ready to bake, as will make a small loaf, and mix with it enough milk to make a batter; let it stand for an hour, then bake in muffin rings.

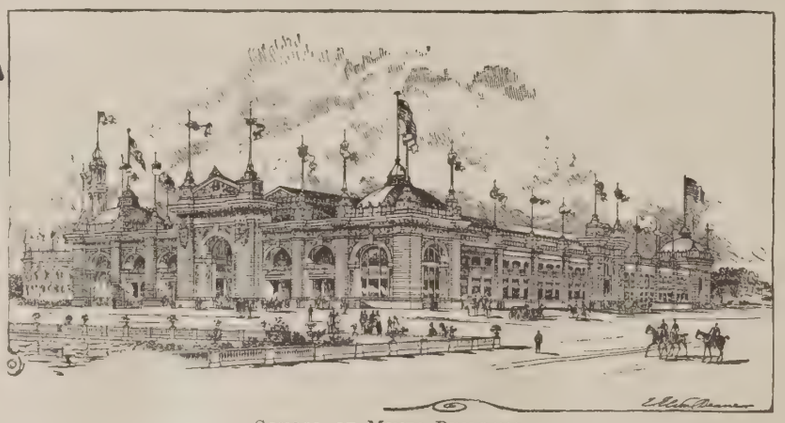
PRESERVED LEMON PEEL.—Let some fresh lemon peels soak in cold water until the white pulp can be scraped off, then boil them until soft, and preserve them in half their weight in sugar; use as a substitute for citron.

THE COLUMBIAN EXPOSITION.

FACTS OF GENERAL INTEREST.

Von Houten & Zoon, the manufacturers of cocoa at Weesp, Holland, have set apart $100,000 with which to make a splendid exhibit at the Exposition in Chicago in 1893. They intend to erect a large building in the style of old Holland architecture of the fifteenth century, and to put in it, besides an exhibit in their own line of business, paintings, views, bric-a-brac, etc., illustrative of the Netherlands and the life and characteristics of the Dutch people. They will have there a "cocoa school," where Dutch maidens, clad in picturesque attire, will make delicate cocoa beverages according to the most approved methods, and will serve it to visitors.

Dr. Edward Bedloe, United States Consul at Amoy, China, who has been an active promoter of the interests of the World's Fair, writes to Chief Handy that, in all English-speaking circles in China, there is a great and growing interest in the Chicago Exposition. In addition to other work he has secured promises from eight friends to send on their private collections of curios and bric-a-brac in 1893, and hopes to obtain most interesting collections from Amoy and from Formosa.



SCHOOL OF MINES BUILDING.

Prof. Ward, the well-known mineralogist and scientist of Rochester, N. Y., called upon Director-General Davis a few days ago and offered to send his entire collection of geological specimens to the Exposition. His collection represents the expenditure of a great deal of money and the work of years, and is one of the most complete in this country. At the Centennial Prof. Ward was allotted space 120 x 130 feet. If he can secure it he will fill considerably more space at the Exposition of 1893.

Colombia will celebrate the anniversary of its independence, July 20, by opening an exposition on that date in 1892. The exposition will continue until the end of October, and will embrace an extensive showing of the resources and products of the country, and also a historical, archæological, and ethnological exhibit. At the close of the exposition the whole collection, or the best part of it at least, will be sent to the World's Fair at Chicago as a part of the exhibit from the Republic of Colombia.

The World's Fair Committee of the American Jersey Cattle Club has addressed a circular letter to every breeder of Jersey cattle in America, for the purpose of enlisting his aid in securing for the Jersey breed a creditable representation in the live stock department of the Exposition, and in the dairy tests which are to be made. This committee is composed of J. J. Richardson of Iowa, W. J. Webster of Tennessee, John Boyd of Illinois, and F. E. Shaw and P. J. Cogswell of New York, all of whom are well known cattle breeders. In their circular letter they say that it has been decided to show at the Fair a herd of fifty Jersey cows in milk, and that the association will bear all expense of transporting, caring for, and feeding them. The breeders are asked to furnish one or more of their finest cows to this herd. The letter gives also the terms of the proposed milk and butter tests. The prospects are most encouraging that all of the chief breeders of dairy cattle will be represented by herds of fifty exceptionally fine animals, and that the tests will be so successfully conducted that the results will be quoted as standard authority for years to come on the question of the relative merits of the respective breeds.

The monster Manufactures and Liberal Arts Building requires more than two hundred car loads of lumber, or 3,000,000 feet, for its flooring alone, and five car loads of nails to fasten it down. Three electric saws are kept running night and day sawing and sizing the flooring. Twenty buildings of the size of the Auditorium, or 1,000 houses 25 by 50, could stand on this mammoth floor.

Medusaline, a new composition designed as a substitute for brick and building stone, has been adopted for the sidewalks and driveways in the Exposition grounds. The Committee on Grounds and Buildings granted the contract to the Medusaline Manufacturing Company of Chicago for the construction of 450,000 square feet of such sidewalks and driveways. The price is 6½ cents per square foot. The concrete composition to be used by the contractors is said to be as hard as perfect stone, and it is now thought probable that it will be used instead of staff for the exterior ornamentation of the Fine Arts Palace, and several other buildings.

Wyoming's building at the Fair will be of the French cheateau style of architecture, 50 by 70 feet, two stories high, and will cost about $20,000.

The Chicago Furniture Manufacturers' Association, which has a membershtp of 210, and an aggregate capital of $26,000,000, proposes to make a united exhibit of mammoth proportion in the furniture and upholstery line.

Rev. Dr. S. J. McPherson, of Chicago, at the instance of a number of associates prominent in religious circles, will correspond with individuals and societies in the various denominations with a view of having a conference of delegates from all parts of the country to arrange for a religious exhibit at the World's Fair.

Some rare old curios in the way of saddles and ancient harness will probably be seen at the World's Fair. The National Association of Saddlers has decided to raise $35,000 for an exhibit of their trade at the Fair. This will be expended, largely for ancient saddlery and harness which will be procured through special collectors.

Aquatic fowls of all climes will probably swim about in the lagoons of Jackson Park during the period of the Fair. Landscape Architects F. L. Olmstead & Co. recommended the purchase of a great variety of water fowls. The list includes widgeons, sea gulls, swans, brown pelicans, storks, sand-hill cranes, American wild geese, blue geese, toulouses, flamingoes, snow egetes, and scarlet ibes. The purchase of at least ten of each species of the birds as enumerated was recommended.

The great dome of the Administration building, which will be the most conspicuous architectural feature of the Exposition, and the four smaller domes, will be covered with aluminum bronze, a newly discovered amalgam, which is said to glisten brighter than gold. The contract for gilding the domes has been let for $54,000.

Ceylon has sent, through, Sir Henry Wood, a request for space upon which to build a tea house.

Pueblo, Col., is raising money with which to equip and send to Chicago a "cowboy band."

The jewelers of Hanau, the great jewelry center of Germany, have decided to make a united exhibit at the Fair. Members of the Association have received great encouragement from the imperial government.

Nearly $700,000 of insurance has already been placed on the Exposition buildings in process of erection. The insurance will be constantly increased as the structures grow.

Director-General Davis has made a report to the Committee on Awards in which he says that 142 juries, embracing 659 jurors or judges will be necessary at the Exposition. He believes that appointment on these Juries of Award will be considered a high honor and that a better class of jurors will be secured if no salary is offered. He recommends, however, the payment of six dollars a day to each juror in lieu of expenses. He thinks a prize of $500 should be offered for the best design for a medal, two prizes of $250 for the next best two designs; and like prizes in case of designs for diplomas. The government is expected to appropriate about $500,000 for carrying out the awarding of the medals and diplomas. It is hoped, too, that the medals will be struck in the Government building at the Exposition, and the diplomas will be prepared in the Bureau of Engraving and Printing at Washington.

The Illinois State Board of Charities will make an exhibit in the Illinois building.

The Consul-General of Japan at New York, Mr. Takahira, writes to Chief Skiff of the Mines department that the mining and metallurgical exhibit from that country in copper, gold, silver and lead will be something exceptionally large; also in porcelains, potteries, clays and bronzes.



·GALLERIES·OF·FINE·ARTS·
World's Columbian Exposition
·C·B·Atwood Architect·

COLD WINTER SIGNS.

A PREDICTION THAT MAY OR MAY NOT PREDICT.

"This is going to be a very hard winter," said an old resident of Allentown, Pa., "and I'll tell you why I say so. In the first place look at the hornets' nests. You will find them high up this Fall. That's a sure sign of a hard winter. If it is going to be a mild winter you will find them near the ground. Two years ago and three years ago the winters were mild and the hornets' nests were low down. Then take the angle worms for another sign. Dig in the ground now and you will find them crawling two feet or more below the surface. They know what kind of weather is coming and they go down to avoid the frost. Two years ago I found them not three inches under the surface and they stayed there all the winter. Fuzz on hogs is another sure sign of a severe winter. Butcher a hog now and you will find a thick fuzz at the roots of the bristles. The fuzz wouldn't be there if the next winter wasn't going to be a tough one. Two or three years ago this fall there wasn't any fuzz at all on hogs, and you know how open the winters were. I predicted a hard winter in 1855 from these signs, and my neigbors ridiculed me, or tried to, but we got in just as I said. I had so much faith in the signs that I got a lot of boys to trap all the quail for me that they could. I wintered over two hundred quail, and in the Spring of 1856 there wasn't a live quail in the Lackawanna Valley except the ones I had. I turned them all loose at various points, and in the Fall we had some good shooting, which we wouldn't have had if I hadn't paid attention to the signs."

THE TIME AT NIGHT.

HOW TO ESTABLISH IT BY THE STARS.

Most people in a clear day can, without a watch or other timepiece, form a closely approximate idea of the time of day by the position of the sun, but few, perhaps, have guessed at any similar method of computing the time during the night without any other means than the "starry skies." Notwithstanding, a fairly reliable time indicator can be found in the northern skies on every cloudless night. As is generally known, the group of fixed stars called the "Dipper" makes an apparent revolution toward the North star in every twenty-four hours, with the two stars forming the outer elevation of the bowl of the dipper pointing nearly directly to the polar star continuously. If the position of the "pointers" is taken at any given hour say six o'clock in the evening in winter time and as soon as it is dark in the summer, the hour can thereafter be pretty accurately measured by the eye during the night. Frequent observations of positions will have to be made at the given hour, as, owing to the constant changing of the earth's position in space, the position of the "pointers" in relation to our point of observation, and the star also change. Observations taken during the year and impressed on the mind will make a very good time indicator of that part of celestial space.

BUSINESS NOTES.

FLAT STEEL WIRE.

The production of the flat steel wire that furnishes the power of self-acting shade rollers is a very important manufacture, requiring technical skill of a high order in the various departments that the rod has to pass through, from its rough rolled state to the large coils of flat, highly tempered steel ready for the spring winding machines. The large rods are first subject to an intense heat in the muffler; thence to the acid baths, coating trough, and water treatment, after which to the highly heated bakers. This treatment prepares the rod for the powerful drawing flames, where the size is gradually reduced by being drawn through dies. When the diameter is small enough the wire is passed through rolling machines to flatten, then to the tempering department where the finishing occurs. A high grade of steel is the first necessity, and if it receives the best treatment, then a spring can be formed from the product that will be satisfactory. Mr. Stewart Hartshorn was the first to use steel wire in shade rollers. He at first, as his father did before him, used brass wire. The unsatisfactory nature of brass springs prompted him to make long and persistent endeavors to get wire drawers to produce correctly tempered steel wire in large coils from which springs could be wound. At last fair success was met with and the use of brass was discontinued. Many improvements have been made since the first steel spring was used in shade rollers. With the wish to still further improve, Mr. Stewart Hartshorn has lately built in East Newark, adjoining his Eastern shade roller factory, the most complete wire plant, with the latest machinery, most of which is of novel and original construction, to produce the best steel wire possible for his shade rollers. It is an interesting sight to see the new powerful Corliss engine driving the heavy machinery, to note the various manipulations through which the wire passes, and then when we are informed that every pound of the product goes into the Hartshorn shade rollers, we are impressed somewhat with the extent of the trade on this article.

CLEANSING VARNISH.—White spots on varnished furniture will disappear if you will hold a hot plate from the stove over them; or rub them with essence of peppermint or spirits of camphor.

SNOWED UNDER.—"Did you run for office the other day?" asked Spriggins of a defeated candidate. "No," said the candidate, sadly, "I walked. The other fellow ran."—*Somerville Journal.*

ARTIFICIAL SILK.—A German chemist has succeeded in producing artificial silk, which has all the qualities of the natural article except strength, wherein it is deficient, being only two-thirds as strong.

VALUABLE SECRET.—An important discovery, by means of which ordinary soft steel can be readily used for all kinds of tools, has been made by a man in Pennsylvania. The process is still a secret.

INK FOR GLASS.—A solution called diamond ink has been invented which enables one to write upon glass. It is necessary to allow it to remain upon the glass about fifteen minutes before wiping off.

DOMESTIC PHENOMENON.—"Robert, dear, how do you suppose those dozens and dozens of empty bottles ever got into the cellar?" "Why, I don't know, my dear. I never bought an empty bottle in my life."—*Brooklyn Life.*

WHY, INDEED!—"Have you got any stale buns?" asked Johnny Fizzletop, sticking his head into a pastrycook's shop. "Yes I have five or six dozen left." "Serves you right! Why didn't you sell 'em while they were fresh."

PENS AND SURGERY.—Vaccinating with steel pens is recommended by a French physician. The pens are cheap enough to allow of a fresh one being used for each operation, and thereby all danger of infection from the lancet is avoided.

LAND-POOR.—In Virginia there are 15,000,000 acres of arable land lying untilled. The greater part of it is the property of large holders, who get no income from it and who do not possess the capital needed for its cultivation. The State authorities have come to their aid and are striving to attract immigrants, who will take it up and put it to service.

NEW PEN WIPER.—The rapid oxidation of steel pens by the inks at present in use has set some German to experimenting, and he has found that if a pen, immediately after use, be stuck into a raw Irish potato it will last a far longer time than it does ordinarily, even with the best of care. The juice of the potato is alkaline, and thus neutralizes the action of the ink acids.

USEFUL PLASTER.—A plaster composed of one part of carbonate of lead in two parts of olive oil is considered in Holland to be an efficacious remedy for sprained joints. Dr. Duhamel has been trying the effect in Paris on a number of cases, most of which were sprains of the ankle, and it is said that patients were made to walk as soon as the plaster and retaining dressings had been applied.

PLASTIC SLATE.—A correspondent, writing to *Stone*, says: "It has been quite recently demonstrated that slate, ground up and bolted, can be made into a plastic mass, can be made involving great pressure, and the product then subjected to great heat, charged into an enduring and solid stone. The paste can be formed into anything that can be formed into moulds or by the hands, and everything that is now made from the actual stone can be formed in this way.

SOAPSTONE.—Soapstone, or Steatite, can be made into anything. Very beautiful stoves are made of it, and stationary washtubs and sinks are important products. Not an ounce need be wasted, for the dust is used to adulterate rubber goods, giving so called gum rubbers their dull finish, and in paper, too, it is used to give weight, while all waste can be ground up into a flour which can be made into a fireproof paint for the interior of mills or the roofs of buildings.

PENCIL PROTECTOR.—A new discovery has been made by railroad clerks in Pittsburg regarding the saving of lead pencils. The new idea to preserve a soft pencil is to take a gross of the useful article and place them in a jar of linseed oil. Allow them to remain in soak until the oil thoroughly permeates every particle of the wood and lead. This has the effect of softening the mineral, at the same time making it tough and durable. It has been found very useful and saving, an ordinary pencil being used twice as long under the new treatment.

TRADE-MARKS.—According to the decision of the Supreme Court of Pennsylvania, in the case of Hoyt et al. *vs.* Hoyt et al., the size, shape or mode of construction of a box, barrel, bottle or package into which goods may be put is not a trade-mark, and if a manufacturer has a right to use a certain label he may use it on any kind of bottle that is not patented, and he will not be restrained from combining his own label with a particular shape or style of bottle for the mere reason that the latter had been previously adopted by some other producer of similar goods.

A STEAMBOAT LOCOMOTIVE.—A steamer which can be propelled on land by means of its own engine has just been constructed at the Ljunggren Engineering Works, Kristiansstad, in Sweden. It is intended for the traffic on two lakes close to Boras, which are separated by a strip of land. Rails have been laid between the two lakes. The steamer, which has been christened very appropriately "Svanen," the "Swan," can run itself across from one lake to the other. At a trial trip at the works the vessel fulfilled the tests very well. The engine is ten-horse power, and the "Svanen" can accommodate sixty passengers.

LAKE LEVELS.—The following figures show the mean level of the surfaces of the great lakes above mean tide at New York and their maximum depths, respectively: Lake Ontario 246.61 feet, 738 feet deep; Lake Erie 572.86 feet and 210 feet deep; Lake Michigan 581.28 feet, 870 feet deep; Lake Huron 581.28 feet, 750 feet deep; Lake Superior 601.78 feet, 1,008 feet deep. The deepest water runs very fairly in mid-lake throughout the chain. The areas of water surface in square miles, according to Crossman's delineation, is as follows: Lake Superior 31,200, Lake Huron 23,800, Lake Michigan 22,450, Lake Erie 9,960, Lake Ontario 7,240, or a total area of 94 650 square miles.

CALIFORNIA TIN.—Deposits of tin. very promising in value. have been found on the eastern slope of Laguna Mountain, near San Diego, Cal.

EFFECTIVE CEMENT.—A most excellent cement for fastening leather, paper or wood to metal can be made by adding a teaspoonful of glycerine to a gill of glue.

HEROIC TREATMENT.—Bordier proposes to inject negro blood into the veins of unacclimated white persons who contemplate a visit to the yellow fever zone.

FURNITURE POLISH.—Furniture polish may be made by taking one and a half ounces each of alcohol and butter of antimony, one-half ounce of muriatic acid, eight ounces linseed oil, one-half pint of vinegar; mix cold. This will be found good.—*The Old Homestead*

NON-CONDUCTORS.—Among non-conductors, when used alone for steam-pipe and boiler coverings, may be classed wood strips, hair, wool, hair felt, wool felt, cork, infusorial earth, mineral wool, rock wool, pumic stone, sawdust, charcoal, paper pulp, plaster-of-Paris, ashes, and air spaces.—*Grimshaw's Hints.*

OIL AS FUEL.—The boilers that supply the steam for the big pumping engines at Brilliant, Pa., near Pittsburg, are now wholly heated by oil fuel. Experiments have been made with oil in combination with coal, wood and natural gas, but it has been found that the oil alone makes the greatest heat.—*The Safety Valve.*

LOST POWER.—The power absorbed by the reciprocating parts of an engine during each stroke is equal to their weight lifted as many feet high as would be necessary in order to produce their velocity by falling. This can be calculated by the rules relating to the velocity of falling bodies.—*The Weekly Stationary Engineer.*

MINUTE GIANTS.—An ant, three-eighhts of an inch long, carrying a burden of one-sixth of a grain, moves at the rate of one mile in eleven hours. This weight—a small one compared with what they sometimes carry—is eighteen times their own. In carrying this weight they compare with a man five and a-half feet high, weighing 140 pounds, carrying a ton and a-half of lead from St. Louis to Jefferson City and back again in twenty-two and a-half hours.

A Tonic

Horsford's Acid Phosphate.

A most excellent and agreeable tonic and appetizer. It nourishes and invigorates the tired brain and body, imparts renewed energy and vitality, and enlivens the functions.

Dr. EPHRAIM BATEMAN, Cedarville, N. J., sasy:

"I have used it for several years, not only in my practice, but in my own individual case, and consider it under all circumstances one of the best nerve tonics that we possess. For mental exhaustion or overwork it gives renewed strength and vigor to the entire system."

Descriptive pamphlet free.

Rumford Chemical Works, Providence, R. I.

Beware of Substitutes and Imitations.

CAUTION:—Be sure the word "Horsford's" is on the label. All others are spurious. Never sold in bulk.

WHITE CEMENT.—White cement of the same character as Portland cement is made by grinding together three parts of chalk and one of kaolin, burning at a red heat and grinding again. The cement made by this process hitherto has shown a tensile strength only about one-half as great as that of good Portland cement, but it has the hydraulic quality and other characteristics of Portland cement, and it is to be hoped that the manufacture may be so improved as to increase the tensile strength to the point required for making artificial stone. If a white cement can be found for a matrix it will be easy to obtain aggregates of light color by utilizing white sand, marble dust, white talc, and so on, suitable for making a concrete which could be used in place of marble.

WHERE IS YOUR MOUTH?—It has been discovered that the human mouth is slowly but surely and steadily moving towards the left of the face, which will in time bring it somewhere in the neighborhood of the left ear. All the five great races of man have an uncontrollable tendency to eat only with the teeth which grow from the left jaws. This wears out the left teeth more rapidly than those on the right side of the mouth, and this in turn gives the upper and lower jaws an inclination towards the left. It is the expressed opinion of many scientists who are foremost in the world's roll of professional honor that in the course of time the mouth, from causes above mentioned, will have completely changed its position, and that it will then be situated rather nearer the left ear than the nose!—*St. Louis Republic.*

METROPOLITAN TIME.—Any observant man accustomed to the ways of this town need never depend on sun dials, clocks, or watches to guess the time of day. Dozens of restaurants and club dining rooms give him a close clue to the hours between 7 and 10 o'clock; the same is true of the noon hour, while the movements of shoppers and the varying character of those traveling on the elevated railroads are a sure indication as to other hours of the day. The hour of 8 P. M. is hit off to a nicety by the crowds on their way to the theatres, and the hour of 11 P. M. is as well defined by their return. Even the small hours of the morning are indicated by the movements of street sweepers, milk wagons, and men of half a dozen early morning trades. New York is a clock dial of itself and the movements of its inhabitants proclaim the hours as loudly and to the sympathetic ear as musically as any sounding gong.

WHO INVENTED THE THIMBLE?—The Dutch have always claimed the credit of having invented thimbles, and by tacit consent their claim was allowed up to a few years ago, but, unfortunately for the reputation of the Holland tailors, about the middle of this century, the antiquarians delving in the ruins of Herculaneum, uncovered a jeweler's shop, and found half a dozen gold and silver thimbles of the most improved modern patern. Since then several thimbles have been discovered in the Egyptian catacombs, in mummy cases antedating the Christian era fifteen to eighteen centuries. So how old is the thimble, or by whom it was invented, are questions that cannot be answered. The name is believed to be a perversion of thumbell, as the thimble was formerly worn on the thumb. The manufacture of thimbles was introduced into England from Holland in 1695 by a metal-worker named John Softing.

AMERICAN SHOES.—Special Examiner Hyer of the Patent Office has just returned from a tour of inspection through the great boot and shoe factories of Lynn and Haverhlil, in Massachusetts, and says that it is wonderful how machinery is now utilized to produce the output in this country. With the aid of one ingenious device one man can sew together soles and uppers for 450 pairs a day. On what is known as the standard nailer a single operator can nail 300 pairs, the machine making its own nails by wire, pointing them, driving them and at the same time automatically regulating the length of each nail to the thickness of the sole. With loose nails or pegs one person can do 600 pairs a day, though the toes and heals must be made additionally secure afterward. One pegging machine will peg two pairs of women's shoes per minute, cutting its own pegs from strips of white birch at the same time. A thousand cords of wood are cut into shoe pegs every year into the United States. All machines for sewing shoes are of American invention. The last census showed that the manufacture of boots and shoes was the greatest single industry in America, employing the largest amount of capital and the greatest number of individuals. The employes of the trade are about equally divided as to sex.

"No baking powder is gaining public favor so rapidly as Cleveland's."

One reason is people like to know what they are eating, and the composition of Cleveland's baking powder is given on every label.

So many baking powders containing ammonia or alum are widely advertised as "absolutely pure," the best way is to refuse any brand the composition of which is concealed.

EVERY one in need of information on the subject of advertising will do well to obtain a copy of 'Book for Advertisers," 368 pages, price one dollar. Mailed, postage paid, on receipt of price. Contains a careful compilation from the American Newspaper Directory of all the best papers and class journals; gives the circulation rating of every one, and a good deal of information about rates and other matters pertaining to the business of advertising. Address

ROWELL'S ADVERTISING BUREAU,
10 Spruce St., New York.

Fine Table Wines

From our Celebrated Orleans Vineyard.

Producers of the

ECLIPSE CHAMPAGNE,

530 Washington St. SAN FRANCISCO.

Kreud Sarmathy & Co.

GROWERS OF

Chateau d'Orleans, the highest grade Claret made in America.

Cabernet Blend, the richest and finest of Table Clarets.

O V Chablis, possessed of all the delicate pungency of its French counterpart.

O V Sauterne, with the exact character and *Seve* of imported Sauternes.

The **Chateau d'Orleans** and **O V Chablis** are sold in glass only.

PURE PEPSIN

In Powder and Scale.

MANUFACTURED BY

ARMOUR & COMPANY, Chicago.

Guaranteed free from adulteration or make-weights; of excellent physical properties and high digestive power.

Under similar conditions, **ARMOUR'S PEPSIN** will exhibit greater activity than any other pepsin now before the profession.

The Manufacturers will be pleased to supply members of the Medical Profession with samples of their pepsin, and with full details regarding digestive strength, if desired.

PUBLICATIONS OF THE

ANALYST PUBLISHING CO.

THE AMERICAN ANALYST.
Weekly. Every Thursday. $1 per year.

THE ROOFER AND TINNER.
Monthly. 15th each month. $1 per year.

THE LEATHER MANUFACTURER.
Monthly. 1st each month. $3 per year.

Reliable agents and representatives wanted everywhere on liberal terms. Address

ANALYST PUBLISHING CO.
19 PARK PLACE, NEW YORK.

CONFEDERATE MONEY.

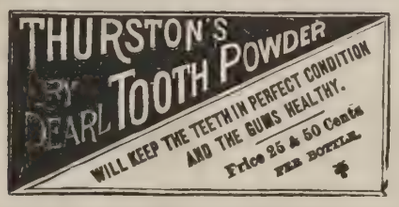
Warranted Genuine and in Good Condition.

We are extensive dealers in Confederate Money—rare relics of our late civil war; also Bullets, Cannon Balls, etc. We want agents in every city North to sell these mementoes, and we will pay agents handsomely to sell our goods. We will furnish the money to those desiring at the following retail prices: Shinplasters, 10, 25, 50 and 75 cents each, or the entire set 50 cents. Complete sets, consisting of $100, $50, $20, $10, $5, $2, $1, 50c., $1 per set. $500 bills, $2.50 each. $100 bills, 15 cents, or two for 25 cents. $50 bills, 10 cents, or two for 15 cents. $5 and $20, 5 cents each. 50c., $1 and $2, 25 cents each. Inquirers enclose stamp for reply.

Publishers of SOUTHERN AGENT, Atlanta, Ga.

FORTY DOLLARS FREE.

How many words can you make using only the letters in the words **"Hat Identifier?"** First prize, $25; second prize, $10; third prize, $5; fourth prize, one dozen "Identifiers." Send a DIME for rules governing contest and sample "Identifier" to ILLINOIS METAL CO., Royal Insurance Building, Chicago, Ill.



MAGEE'S EMULSION

No other proprietary medicine has the endorsement of Physicians to the same extent.

None is used in Hospital practice with so large a percentage of satisfactory results.

No other remedy has cured so many cases of

CONSUMPTION

and other Pulmonary Diseases.

SCROFULA

is entirely eradicated from the system by its use.

It is as easy to take as Maple Syrup or Honey, and can be retained by the most delicate stomachs without nausea.

IF YOU have a Cold, Cough, Bronchitis, Dyspepsia, or a generally run-down system, you can regain health and strength quickly by the use of

MAGEE'S EMULSION

Ask your Druggist for it, and take only that labeled

MAGEE EMULSION CO., Lawrence, Mass

INSTRUCTIONS TO SUBSCRIBERS.

The Names of all Subscribers are registered as soon as received, and paper is always promptly forwarded.

Postage.—The postage to all parts of the United States and Canada is paid by the publisher.

Remittances of small sums may be made with comparative safety in ordinary letters. Sums of one dollar or more must be sent by registered letter or P. O. money order, otherwise we cannot be responsible for same. Silver must not be sent in a letter.

Postage Stamps will be received for the fractional part of a dollar, and in any amount when it is impossible for patrons to procure bills, but you must send one or two-cent stamps only.

SUBSCRIPTIONS.—The AMERICAN ANALYST will be sent one year to any subscriber for ONE DOLLAR. New subscriptions can begin at any time.

We Stop the Paper at the expiration of the time paid for unless a renewal of subscription is received. Those whose subscriptions have expired must not expect to continue to receive the paper unless they send the money to pay for it.

Change of Address.—Subscribers wishing their addresses changed must invariably give their former as well as new address.

Missing Numbers.—It occasionally happens that numbers of our paper sent to subscribers are lost or stolen in the mails. In case you do not receive any number when due, write us a postal card and we will cheerfully forward a duplicate of the missing number.

Most Important of All.—In every letter that you write us, never fail to give your full address, plainly written—name, post-office, County and State.

Address all letters to

THE ANALYST PUBLISHING CO.,
19 Park Place, New York.

"BILLET"

are

Carefully Selected

French Sardines,

Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS.

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,
HOWARD STREET, BOSTON, MASS.

HARTSHORN'S SELF-ACTING SHADE ROLLERS

NOTICE SCRIPT NAME OF Stewart Hartshorn ON LABEL, AND GET THE GENUINE HARTSHORN

A FORTUNE IN A FORTNIGHT!

Can't be expected, but thousands are making good livings from our FAMOUS TRADE SECRETS; Nearly 3000 GUARANTEED receipts of every business sent for $1.00. List and particulars free.

Box 441. EUREKA PUBLISHING CO., Chicago, Ill.

LADY AGENTS WANTED.

I have a medical specialty for ladies use, which is one of the best selling articles in the country. You can make a good income handling it, and at the same time be doing your sex a great benefit. Write me at once for full information and exclusive territory. If you wish a sample sent enclose 12 cents postage. Dr. H. H. Jackson, 103 State Street, Chicago.

AGENTS WANTED ON SALARY

or commission, to handle the New Patent Chemical Ink Erasing Pencil. Agents making $50 per week. X218

MONROE ERASER MFG. CO., LA CROSSE, WIS.

GRANT.

SHERMAN.

SHERIDAN.

McCLELLAN.

GEN. GRANT'S MEMOIRS.

Original $7 Edition for 30 Cents.

NO book, excepting the Bible, has ever had such a sale in the United States as General Grant's Memoirs. 650,000 copies have already gone into the homes of the rich, but the subscription price of $7.00 has placed it beyond the reach of people in moderate circumstances. **If 650,000 people have been willing to pay $7.00 for Grant's Memoirs, there must be a couple of million people in the United States who want them, and will jump at the opportunity** to buy them at the low figure here offered.

We will send you General Grant's Memoirs, publisher's original edition, best paper, cloth, green and gold binding, hitherto sold by subscription at $7.00,

FOR 30 CENTS!—FOR 30 CENTS!—ABSOLUTELY ONLY 30 CENTS!

and absolutely a proposition such as has never been made in the history of book publishing. The two splendid volumes of Grant's Memoirs, of which 650,000 copies have been already sold—not a cheap edition, but the best—for 30 cents; provided you send your subscription of $1.00 to the **AMERICAN ANALYST** one year, and also a subscription of $3.00 for the **COSMOPOLITAN MAGAZINE,** the brightest and cheapest of the great illustrated monthlies, itself equal to the best $4.00 magazine.

The **COSMOPOLITAN** is enabled to make this offer because of **the purchase of 600,000 volumes at a price which even publishers would deem impossible, and with the idea of running up its circulation to half a million copies.** By contract with the **COSMOPOLITAN,** and at no profit to us, we are enabled to offer our readers a share in the low price obtained through the largest purchase of books ever made in the history of the world.

If, however, you have Grant's books, our offer will permit you to take instead,

GEN. SHERMAN'S MEMOIRS, 2 Vols., sold by subscription for $5.00
GEN. SHERIDAN'S MEMOIRS, 2 Vols., sold by subscription for 6.00
GEN. McCLELLAN'S MEMOIRS, sold by subscription for . . . 3.75

All of these are bound in cloth, green and gold, in uniform style with Grant's Memoirs.

Send us at once $3.00 for year's subscription to the **COSMOPOLITAN,** $1.00 for year's subscription to the **AMERICAN ANALYST,** and 30 cents for a set of Memoirs—$4.30 in all—to which add postage on the particular set of Memoirs selected.

WHY DO WE MAKE THESE GRAND OFFERS?

Simply because we want every intelligent family to keep well informed as to the popular science of this progressive era. We publish the **only popular journal on this subject—THE AMERICAN ANALYST.** Its subscription list is already very large; but we want at least **Fifty Thousand additional subscribers before January 1, 1892.** We know that, if we shall get them, we shall be able to hold most of them as permanent readers of our periodical. So at present sacrifice and at great cost, we have entered into a combination. The **COSMOPOLITAN** is the brightest and cheapest of the great illustrated monthly magazines; it gives annually 1,536 pages by the ablest writers, and over 1,200 illustrations by the ablest artists; and is just as interesting to the young boy or girl as to the oldest grey head. Now, then, we ask you to send us merely $4.30, and, on receipt of same, we will mail them to you regularly for **one year,** and will also send you making no charge for the books) a set of **GENERAL GRANT'S MEMOIRS,** or either of the other works that you may select. **NO SUCH OFFER AS THIS WAS EVER MADE BEFORE BY ANY PUBLISHER SINCE TIME BEGAN!**

UNLESS OTHERWISE DIRECTED,

we shall invariably ship the books by express, charges to be paid by the receiver. If you wish the volumes forwarded by mail, you must distinctly say so at the time when you send us your address and the Money; and you must also enclose postage to prepay the packages at the following rates: **GRANT'S MEMOIRS,** 96 ozs., 48c.; **SHERMAN'S MEMOIRS,** 92 ozs., 46c.; **SHERIDAN'S MEMOIRS,** 84 ozs., 42c.; **McCLELLAN'S MEMOIRS,** 48 ozs., 24c. The government rate for postage on books is one-half cent per ounce. The **COSMOPOLITAN** and **AMERICAN ANALYST** are sent to subscribers free of postage.

SEND ALL ORDERS ADDRESSED

THE ANALYST PUBLISHING CO.,

19 Park Place, New York.

TABASCO PEPPER SAUCE,

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced by connoisseurs to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY'S SON,

NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

NATRONA BI-CARBONATE OF SODA.

ABSOLUTELY PURE.)

The nature of the raw material from which NATRONA BI-CARBONATE OF SODA is made—viz., kryolith, a mineral containing *pure sodium*—insures a purity and uniformity of product which cannot be obtained from any other known material. In making BI-CARB. SODA from any other raw material, the use of sulphuric acid is a necessity, but none is used in any part of the process of making NATRONA BI-CARB.; hence its entire freedom from the slightest trace of arsenic, which is always present in ordinary soda. Its absolute purity and entire freedom from all traces of *sulphate of soda*, common salt and other impurities, render NATRONA BI-CARB. NEARLY TASTELESS, and being bolted through the finest bolting-cloth, insures the finest stage of division.

To these indisputable facts the attention of CONSUMERS of soda is specially called. They are IMPORTANT, and should influence both those who use and those who sell soda, to buy and sell NONE BUT THE BEST.

The NATRONA BI-CARB. Soda is kept in stock by almost every wholesale druggist and grocer throughout the United States, of whom it may be ordered.

Natrona Bi-Carb. Soda is unequaled by any other brand of English or American Manufacture.

PENNA. SALT MANUFACTURING CO.,

NATRONA CHEMICAL WORKS. PHILADELPHIA, PA.

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

ARROWHEAD HOT SPRINGS,

CALIFORNIA.

I MOST respectfully invite physicians of the East to write to me for information concerning this famous Southern California resort. The hot mineral water mud baths, and climate are unequalled in America. Diseases of the throat, lungs, liver, stomach and kidneys, nervous and skin troubles and rheumatism, are the ailments successfully treated. The hotel contains 125 rooms, is first-class, and lighted throughout with incandescent lights. Elevation 2,000 feet. Address,

H. C. ROYER, M. D.,

Arrowhead Springs, San Bernardino Co., California.

A COLLEGE EDUCATION FREE!

In one of the oldest, most prominent Colleges in the country, **ABSOLUTELY FREE.** A chance of a lifetime. Do you want it? You do not need to invest a dollar. Write for particulars to one of the brightest and most original illustrated monthlies in America. Address,

BUSINESS WORLD, DETROIT, MICH.

GOITRE, or THICK NECK.

I have a positive, speedy, cleanly, harmless and almost inexpensive cure. Come or write to me at 28 Arlington Court, CLEVELAND, Ohio. It is no iodine smear. Cure made permanent.

Dr. J. CASKEY.



RHEUMATISM AND NEURALGIA are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,

184 Greenwich St., N. Y.

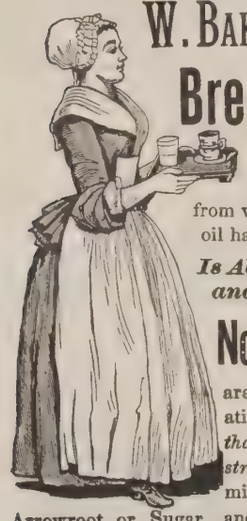
AMERICAN ANALYST CLUB RATES.

WE have made arrangements by which we can furnish to our readers any of the periodicals named below at a club rate, with the AMERICAN ANALYST, at a considerable saving. Should any periodical not mentioned be desired, or several of the journals, drop us a postal card and we will give you a rate promptly. For sample copies address the publishers. Terms strictly cash, in advance.

	Publishers' Price.	Our Price, including AMERICAN ANALYST, One Year.
Arthur's Home Magazine	$1.50	$2.35
Babyhood	2.00	2.50
Century Magazine	4.00	4.50
Christian Herald, N. Y.	1.50	2.00
Christian Union, N. Y.	3.00	3.50
Cosmopolitan Magazine (See our Premium Offer.)	3.00	3.25
Cottage Hearth	1.50	2.00
Current Literature	3.00	3.50
Demorest's Magazine	2.00	2.50
Family Story Paper	3.00	3.25
Farm and Fireside	.50	1.40
Fireside Companion	3.00	3.50
Forum	5.00	5.25
Frank Leslie's Illustrated Newspaper	4.00	4.50
" " Popular Monthly	3.00	3.50
Garden and Forest	4.00	4.25
Godey's Ladies' Book	2.00	2.50
Golden Days	3.00	3.50
Good Housekeeping	2.40	3.00
Harper's Bazaar	$4.00	$4 50
" Young People	2.00	2.50
" Weekly	4.00	4.25
" Magazine	4.00	4.25
Home Magazine (Mrs. Logan's)	.50	1.25
Judge	5.00	5.00
Ladies' Home Journal	1.00	1.75
Ledger, New York	2.00	2.50
Life	5.00	5.50
Lippincott's Magazine	3.00	3.25
Magazine of American History	5.00	5.00
New York Weekly	3.00	3.50
Our Day, Boston	2.50	3.25
Outing	3.00	3.50
Peterson's Magazine	2.00	2.50
Popular Science Monthly	5.00	5.25
Puck	5.00	5.00
Review of Reviews	2.00	2.75
Scientific American	3.00	3.50
Scribner's Magazine	3.00	3.25
Youth's Companion	1 85	2.50

ADDRESS THE ANALYST PUBLISHING CO., 19 Park Place, New York.

GOLD MEDAL, PARIS, 1878.



W. BAKER & Co.'s Breakfast Cocoa

from which the excess of oil has been removed,

Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

IF you wish to advertise anything anywhere at any time write to GEO. P. ROWELL & CO., No. 10 Spruce St., New York.

SWIFT'S

CHOICE

Chicago Dressed Beef

AND

MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,

UNION STOCK YARDS,

CHICAGO, ILLS.

THE ORIGINAL AND GENUINE (WORCESTERSHIRE SAUCE).



LEA & PERRINS' SAUCE

In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—

Lea & Perrins

Beware of Imitations; see that you get Lea & Perrins'

For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS, NEW YORK.

GLENN'S SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original and Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,

C. N. CRITTENTON,

115 FULTON STREET,

NEW YORK.

The Family Herald,

ISSUED EVERY MONTH,

A CLEAN AND INTERESTING STORY PAPER,

FOR OLD AND YOUNG.

Single Copies, 5c. Twelve Months, 50c.

ADVERTISING RATES.

One page—4 Columns—48 inches,	$40 00
Half page—2 Columns—24 inches,	25 00
One column—12 inches,	15 00
Half column—6 inches,	9 00
One quarter column—3 inches,	5 00
One eighth column—1½ inches,	3 00

THE FAMILY HERALD,

124-132 CANAL STREET, CINCINNATI, OHIO.

The Standard of Excellence.

KINGSFORD'S

OSWEGO

Pure and Silver Gloss



STARCH

KINGSFORD'S

OSWEGO CORN STARCH

FOR

Puddings, Custards, Blanc-Mange, Etc.

THE PERFECTION OF QUALITY.

WILL PLEASE YOU EVERY TIME.

Always ask your Grocer for these goods.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 52. NEW YORK, THURSDAY, DECEMBER 24, 1891. WHOLE No. 252

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - $1.00 per year.
Single Copies, - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.

Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.

Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,

H. LASSING, M. D., } *Editors.*
T. P. McELRATH, }

No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

Bright Stories
The Robber of Piroche 616
Deceptive Gifts 615
Domestic Dietetics 617
Dress 614
Editorials 613
Books and Disease; Meeting of Military Medical Men; Automatic Service; Electricity at Columbia.
The Columbian Exposition 618

BOOKS AND DISEASE.

Seldom do we stop to think, on taking a book from a public library, who might have handled the volume last. Books are lent out, and go from family to family, no attention being paid to the fact that they may have been handled by a patient having a contagious disease. The *British Medical Journal* mentions a case where a physician recognized in the house of a patient suffering from scarlet fever a book which he had noticed a few days before in the room of a former patient suffering with the same disease. On inquiring, he learned that a few days after borrowing the book the symptoms of the second case appeared. The paper used for covering library books soon becomes roughened, and undoubtedly furnishes the means of transmitting infectious diseases. Libraries should be notified, either by the boards of health or by attending physicians of cases of infectious diseases.

MEETING OF MILITARY MEDICAL MEN.

We have received from the Committee of Arrangements a circular announcing that the second annual session of the Association of Military Surgeons of the National Guard of the United States will be held at St. Louis, April 19th, 20th and 21st, 1892. An interesting programme of addresses by prominent surgeons of the National Guard and the United States Army has been arranged, and a goodly number of scientific papers on military and accidental surgery will be read and discussed, and all matters pertaining to the health, usefulness and welfare of the civilian soldiers will receive attention. The afternoon of one day will be set apart for an object lesson from the "Manual of Drill" by Hospital Corps of the United States Army, detailed for this purpose. This will be, without doubt, a very important, as well as instructive, feature of the session. The evenings will be given up to entertainments, receptions and banquets, which the medical profession and generous citizens of St. Louis have planned for their distinguished guests. The Committee of Arrangements have received the assurance that transportation will be satisfactorily reduced on all railroads and steamboats to and from this meeting. The several hotels have promised a low and uniform rate, which will be announced at an early date. It is anticipated that no fewer than five hundred surgeons and assistant surgeons of the National Guard of the United States will be in attendance, to all of whom the Committee of Arrangements will extend a most cordial welcome.

AUTOMATIC SERVICE.

We read in our electrical exchanges that an invention is being perfected for the extinguishment of fires by an automatic electrical appliance, which will probably relieve fire departments in cities from much of their present labor, and also save vast amounts of insurance. The process is thus described: "The building is provided with a chemical reservoir, from which pipes lead to a jar of acid near the ceiling of each room. The jar also contains a cartridge connected with an open circuit battery. The thermostat in each room is set at any desired point—say 80 degrees—and in case of fire the mercury rises to that point and closes the electric circuit. This explodes the cartridge, a valve drops, the chemicals are precipitated into the room, and the number of the room is signaled. This arrangement is supplemented by a series of dry pipes, and in case the chemicals fail to put out the fire the room can be flooded with water by turning a cock on the outside of the building." The advantage of such appliances would be very great in hotels, factories and other buildings where many people are employed. Elsewhere we are informed that a London electrician has invented an electrical device for delivering parcels from stores to houses throughout the city by a little electric railway with two tracks, one above the other, to be laid under the streets in a tunnel about two feet wide and three feet high, with side tunnels branching into the houses of subscribers. "To send a parcel a signal would first be given the central station for a truck. This would be quickly received, when the parcel would be placed upon it and the truck returned to the central station to be dispatched from there to the subscriber designated. The truck would be unloaded automatically, a bell signaling the arrival of the parcel." What an array of such inventions will be exhibited at the World's Fair, and what a revelation is in store for all who are able to visit that tremendous aggregation of the triumphs of genius and skill. The exhibits made by Prof. Edison at the last Paris Exposition were among the most wonderful seen in that renowned display of the world's products, but the coming exhibit at Chicago will overshadow anything of the kind ever witnessed in the history of nations.

ELECTRICITY AT COLUMBIA.

The trustees of Columbia College have established a new course of four years in electrical engineering for the undergraduates of the School of Mines. This is in addition to the present two year post-graduate course, which has been in successful operation for several years. Thus there will be two complete courses in electrical engineering in this city. The latter course is for graduates of scientific schools and colleges, and is entirely devoted to electrical engineering proper, the students having already passed the necessary preparatory studies in mathematics, physics, chemistry, mechanics, drawing, etc. This course is found to give the most excellent results, by reason of the mature years and previous training of post-graduate students. In addition so such graduate students there are, of course, a large number of young men who wish to enter a course of electrical engineering immediately on leaving school, without going through a previous collegiate course. The new four-year course has therefore been established parallel to the regular course in mining engineering, civil engineering, chemistry, architecture, etc., at the School of Mines, with the same requirements for admission, which are equal to the regular entrance examinations at first-class scientific schools. The first two years of the new course will cover the preparatory work of mathematics, physics, etc., required for admission to the post-graduate course. The last two years will be devoted to a thorough course in electrical engineering proper and will be equivalent to the present post-graduate course; hence there is no lowering of standard. The degree given to those who satisfactorily complete the course will be that of "Electrical Engineer." The new course will begin in October, 1892. Examinations for entrance will be held in June and September. The one-year partial or special course will be abolished next year to make room for the students in the regular courses.

READ PAGE 621.

DRESS.

ITS HISTORICAL, ARTISTIC AND HYGIENIC RELATIONS.

A chapter of exceeding interest might be written on the evolution of dress from the earliest times, but for this we have no opportunity at the present. The costumes of the Saxons and Normans differed widely. The Norman ladies wore their dresses tightly laced to them, while the Saxons wore theirs loose. The religious satirists of the day accused the Normans of painting their faces and tightening their waists. This now brings us to a subject of which we must speak with awe and bated breath; this is the origin of that much abused article of female attire known as stays. Terence, the Roman dramatist (born about 195 B. C.), makes one of his characters—speaking of ladies—say that "they saddle their backs and straitlace their waists to make them well-shaped." While other writers of the same period tell us that Roman women, whether married or unmarried, used wide girdles of stiff stuff, under which was a tight bandage fastened at the shoulder. This was, however, intended to support the bust and not to compress the waist. At the British Museum is a MS. of the time of Edward the Confessor, adorned by a picture of the Fiend of fashion, and this figure wears an unmistakable corset tightly laced and stiffened by two busks in front, just like the garment worn by Swiss peasants at the present day. In the ancient writings, too, a slender waist is spoken of as a sign of beauty. Even Chaucer speaks admiringly of a woman with a waist like a weasel. Now, however, we come to more sensible times. In the fourteenth century, Joseph, Emperor of Austria, a noted autocrat, passed a law forbidding the use of the corset in all nunneries and places where girls were educated. He also called in the Church to help him, and to excommunicate all those who wore the accursed garment. The College of Physicians, startled into activity by the imperial anxiety, produced numberless learned dissertations on the evils of wearing corsets, and distributed them broadcast through the land. Catherine de Medicis was of quite an opposite way of thinking, and to her a broad waist was an abomination, and it is said that during her reign waists were about thirteen inches in circumference. As well as introducing the artistic and becoming Medicis collar, which we all know so well, she also invented a corset herself, which at first glance might be taken for an instrument of torture of the holy Inquisition. It is made of steel as strong as armor, cut into open work pattern, over which velvet was sewn. It had two parts like a warrior's back and breastplate, on two hinges, and fastened at the other side with a pin like an ordinary box. At the front and back were two bars of steel, from which the dress hung. Considering this there is no wonder that our ancestresses looked stiff and uncomfortable. Whalebone stays were first used in the time of Elizabeth. James the First was so well pleased with them that he ordered all his courtiers, male and female, to wear them. The corset has never been absent from female attire since the time of Elizabeth, in spite of all the dress reformers. In Charles II.'s time the dsesses were very low, of Dutch origin. The skirt was tied back and an apron worn. This fashion was brought from Portugal by Catherine of Braganza. In Anne's time a curious eccentricity was seen in muffs being carried by men. The hoop was worn at various periods from the time of Elizabeth, when it was called a farthingale. It was always inconvenient and was never worn in a carriage. It has existed in our day in the hideous crinolines, and to some extent as a crinolette, and even the so called dress improver is a survival of it. In George III.'s time it was usual to have the head shaved to wear a wig, but occasionally têtes, as they were called, were built up on the head; as dressing these was a long and expensive process, they were left untouched for a long time. A writer describes a visit he paid to his aunt; while he was there the hair-dresser came and examined the huge tête and asked when it had been last refreshed. "Only nine weeks ago," said the old lady. "Well, that is about as long as it can be in hot weather," replied the artist. The writer goes on to describe the proceedings, which are too disgusting to repeat, as may be imagined from the hair being left for two months without the head being washed. In 1775 arose a curious club called the *savior vivre* club, which prided itself on its introduction of foreign cookery into London, in opposition to the Beefsteak Club. One of their dishes was macaroni, and the club came to be called the Macaroni Club. The members were the extreme dandies or mashers of the time. On the head was a toy cocked hat, gold laced, buttoned and tasseled, over the hair fashioned into a foretop two feet in height above the head, with numerous side curls and clubbed tail. He wore tight, striped silk breeches, equally tight coat and waistcoat, gorgeously embroidered, which kept his frail figure together. He carried a long cane, such as Lord Mayors' footmen now bear. He wore a watch in each fob and a pound of seals hanging out. The macaronis rode out in the park on little ponies, and this is the allusion in "Yankee Doodle." The female macaronis had their heads top-heavy with hair, on the top of which they wore toy windmills, ships, coaches and four, &c. Their dress was as tight as the men's, and they dragged after them a long train, giving them the appearance of a wheeling crocodile. The ladies of the regency were dressed in most plain fashion, as owing to the war with France we were cut off from French modes. They wore straight pelisses of striped silk—summer and winter alike; the gowns were very thin and were trimmed with tawdry ribbons. In George IV.'s time we see a revulsion to the hoop, and the women were dressed in high waists and long, straight gowns. At the early part of this century the dress was most extravagant. The ladies' skirts were short, and both sexes wore enormous hats. From that time the present dress has been steadily developing, the only important change in men's dress having been the alteration from knee breeches to trousers. As many of you will remember, about 1850 to 1864 or so, crinolines were worn. Then arose a craze, of which you have heard, of making the Bloomer costume general. Theoretically, it is a good thing to get rid of the heavy skirts, but it requires great care in introducing reform, that they are not repulsive; this the Bloomer was, and was so heaped with ridicule that it quickly died. After the crinolines went out, the fashion again went back to the plain straight skirts; the clothing then became exceedingly tight, this was followed by the crinolette, and now we have swung back to the plain skirts, without, I believe, so much as an "improver." It is now not only possible, but excites no comment, for any woman to be dressed according to present fashion, and yet in obediance to the laws of nature and art. The closely fitting dress shows to the best advantage the graceful curves of the figure, when not tightly laced, and in the case of head and foot covering there is perfect liberty for any sanitary methods. The colors, moreover, are decided ones, and far removed from the ugly shades seen a few years ago, and misnamed "Art colors," during the æsthetic craze. Fashions in men's clothing have changed but little; attempts have been made to alter the present style, but fruitlessly. The Prince of Wales tried to introduce colored coats for men, and began with bottle green, but the fashion did not last long. The Rational Dress Association also agitated for more reasonable dress for men, and exhibited specimens of dress, all on the plan of shorter coat and knee breeches. For evening dress black velvet was suggested, but did not meet with any favor, as we English are perhaps too conservative; when we have a bad thing we like to keep it to the last. Still, in looking back, we can see a steady improvement in dress in many ways, but more especially in the manner in which children are dressed, the little ones being much more carefully attired now than formerly. We may now glance for a moment at the æsthetic requirements of dress. A dress to be beautiful (as all dresses should be) must be true to natural lines, should harmonize in style and color, fulfil its proper purposes, and be free from shams. Now, as I have before remarked, if the dress, according to the present style, were not so constricted at the waist and lower ribs there would be no fault to find, as with this exception, the lines are good. But, even if the pressure did not do harm, the sharp angular lines and abrupt curves, instead of a flowing, graceful one at the hips, would be quite sufficient to condemn it from an artistic point of view. It is of course objected that, with the skirts such as English women are obliged to wear, a smaller waist is necessary than in a nude or draped figure. There is some reason in this, but it is by no means necessary to make seven or eight inches difference, and, moreover, if it is artificial or untrue it cannot be good art. It it were only the custom to have a normal waist of twenty-six or twenty-seven inches, no one would consider it at all clumsy or ugly; in fact, quite the contrary, for all kinds of deformities, such as high shoulders, crinolines, crinolettes, and so on are not only tolerated, but even admired by the devotees of fashion so long as it can be said that they are "as now worn." The whole body from neck to arms and feet should be clothed in wool or silk next the skin. Over this should be worn a bifurcated vesture, which by courtesy may be called a "divided skirt." Of this the best form is that reaching only to the knee—practically knickerbockers made of cloth, serge, or flannel. Woollen stockings and in winter cloth gaiters should cover the lower extremities. No garters should be used. Then comes a lightly fitting (not compressing) corset, without bones or steels, and not made of too stiff material, with a waist measurement of not less than twenty-six or twenty-seven inches for a woman of average height. Over this is worn a bodice and skirt in one, or an ordinary bodice with the skirt suspended either by ladies' braces or, better still, by a broad band shaped to the hips. No other skirt is needed, and the ordinary dress can then be worn as usual. The collar and armholes should not be tight, as the circulation is often impeded by clothing too tight in these situations. I do not suggest that women should be without any kind of corsets, as some garment of the sort is necessary to insure the proper fit of the dress and to give support to the bust. It has been asserted that to look at a woman one would imagine her to be a "one-legged animal," and that, therefore, her garment should be divided. I do not consider this any serious argument, but in any case the custom of centuries has habituated us to seeing women as they are, and so long as no harm is done by a custom, it is best left alone, especially as the time is not ripe for any change. As above mentioned, it is not necessary to go without stays altogether, but steels and bones should be avoided as useless and dangerous. The cry of the women with regard to the corset is always that it is a "support;" but women have the same muscles as men, and if they gave them free play, as men do, instead of fixing them in hard splints, they would not need any outside aid to hold them up. Girls who have never worn corsets do not require any support; on the contrary, are more erect and graceful than the majority of women, and retain their good figure longer than those who think to improve upon nature by the aid of the staymaker. This is at all events the thin end of the wedge toward a better state of things, which we ought all to hope for. The scanty clothing of the lower limbs predisposes to chills and all that follows thereon; while the petticoats assist the stays in their work of pressure. They also keep the pelvis hot, and leave the limbs cold, while preventing free walking by their clinging weight. The stiff garters interfere with the circulation of the limbs, causing varicose veins, consequent skin disease and ulcers of the legs. There is no doubt but that lawn tennis and other healthy outdoor exercises for girls have done much toward ap-

preciation of a better form of clothing, but much, very much, remains yet to be reformed, and for this we must trust in the higher education of women. Of course I know perfectly well that no women ever admit that they tight lace; that would, indeed, be too much to expect; and they practice a little trick to "do the doctor," which has been shown by Doctor Roth. If any lady is remonstrated with as to the compression of her waist and chest, the invariable reply is: "Everything is quite loose; I can get my hand inside the corset easily." Naturally this is most simple, for by bending the body slightly, and breathing out, the size of the chest is still further reduced. The true test is to remove the corsets, let several deep breaths be taken, then, while an inspiration is held, attempt to fasten the dress. It will be found to be several inches too small if there be any compression. It does, however happen that the bony framework of the chest is already fixed in the deformed position, when the test is not quite so successful. Then, again, women tell us that they don't feel the pressure; this is probably true, as the compression is begun at such as early age, when the ribs are soft and easily moulded, that the procedure is painless. That this is intentionally begun early can be seen by referring to the advertisement sheets of a certain ladies' paper, where corsets for young girls are recommended, "in order to mould the figure."—*From a Lecture by Dr. A. Charpentier.*

DECEPTIVE GIFTS.

STEM-WINDERS THAT ARE NOT WATCHES, AND OTHER DELUSIONS.

The subjoined lively description of a species of fraud which THE AMERICAN ANALYST has several times had occasion to expose, is from the *New York Recorder* of December 13th. The swindle is a common one, and has been so thoroughly ventilated that it seems remarkable that any person at this day could be victimized by it. If people would only bear in mind that no matter how speciously they may be advertised, articles of standard worth always command prices proportionate to their value, pretenders of the kind described below would be speedily forced to abandon their nefarious callings: "Many confidence games have from time to time been sprung on an unsuspecting public, all of them being of a more or less ingenious nature. Great companies have been organized, and when thousands of dollars had been paid in by unsophisticated countrymen, and even unwary New Yorkers, who ought to have known better, the bubbles were pricked, and groanings and lamentations were heard on every side. However, it remained for a man, who calls himself F. I. Gray, to evolve a scheme which in its conception and brilliancy surpasses all others. It is just such a scheme as would cause 'Grand Central Pete' and 'Hungry Joe' to raise their hats in admiration of their superior. These two worthies plied a trade which finally put them behind prison bars. Mr. Gray's methods, although sure of reaping a rich harvest, were of a safer kind—so safe, in fact, that he can laugh defiantly at the law—for although on the very face of it the scheme is apparent, he really does nothing but what he publicly advertises. Mr. Gray, until a few months ago, ran a periodical known as the *Household Companion*, but for the reason, apparently, that he was not making money fast enough, he sold out his interest in the business. He disappeared from the public view for some time, but on September 1st he appeared again with the scheme of his life. Renting a couple of rooms at 7 Murray Street, he put up a sign announcing that they were the offices of the *Farm and Household*, and beneath was inscribed the words 'F. I. Gray & Co.' Who the 'Co.' is no one at the office seems to know. The offices had scarcely been rented when an advertisement was inserted in over one hundred papers, soliciting subscribers for the *Farm and Household*. No announcement was made in any metropolitan daily, but weekly and monthly periodicals, that circulated among the rural population and in distant cities, contained the advertisements. They were couched in the most glowing language, and, in order to gain subscribers, gold watches, miniature suites of parlor furniture, and other articles were practically promised to each one. The advertisements were gems of art in their way, and it is estimated that thousands have already been caught in the gorgeous trap. One specimen, for example, fairly scintillates with Dr. Gray's genius. It was published in double column, with two pictures of gold watches, and had the startling headline 'Gold Watches Free.' Another astonishing offer appeared in an advertisement giving pictures of an upholstered parlor set of three pieces, for which any second-hand dealer would give at least $100. Beneath the picture was a statement that 'this beautiful miniature upholstered parlor set' would be sent to any address on receipt of 95 cents to pay expenses, boxing, packing, advertising, etc. After explaining that the set consisted of the sofa and three chairs, and that the offer was simply for the purpose of advertising the *Farm and Household*, the advertisement went on to say, 'They are made of fine lustrous metal frames, beautifully finished and decorated, and upholstered in the finest manner with beauful plush (which we furnish in any color desired). To advertise our house, for sixty days we propose to furnish these sets on receipt of 95 cents. Postage stamps taken. No additional charge for boxes or shipping. Order immediately. No attention paid to letters unless they contain 95 cents.' There was only one inference to be taken from the advertisements—that a gold watch, as pictured, was to be given away on some terms explained only in the *Farm and Household*. Second, that a stem-winder watch was to be given away for one dollar's subscription, and that a parlor set would be given away for 95 cents. As a result, subscriptions began to arrive at a terrific rate. The stem-winders were forwarded, then complaints arrived, and the scheme was stamped as a fraud. In order to prove this latest wrinkle in the advertising line, a *Recorder* reporter climbed to the fourth floor of 7 Murray Street yesterday, the hall directory showing that the office of the *Farm and Household* was No. 34. The office was divided into two apartments by a partition, a narrow door connecting both. Room 34 was barren of furniture save a small desk in one corner. Over the narrow door leading to the inside room was the forbidding sign 'No Admittance.' A twelve inch window or aperture in the partition enabled one to see that the inside room was also destitute of furniture save for the heavy benches running all the way round, and a few chairs. On the benches, piled several feet high, were thousands of little boxes, into which half a dozen young girls were packing the watches for presentation to the subscribers. One of these girls, who had apparently charge of the office, walked quickly into room 34, and, after carefully closing the door, asked the reporter his business. On being informed that he wanted to see one of the stem-winder watches advertised for a dollar's subscription, she replied, with a smile, 'Oh, you are mistaken. We do not advertise watches for one dollar; we only advertise stem-winders. See?' The reporter saw. In fact, he began to become enlightened. Then he asked to see the stem-winder mentioned, and was shown an article that had all the appearance of a gold watch, both in size and shape. Close inspection showed that the case was made of base metal, but as he did not expect the earth for a dollar, he expressed no surprise. Then, pressing the spring, he began to examine the works. When the face of the watch was disclosed the girl laughed, but the reporter became dazed as he realized the brilliancy of Mr. Gray's mind. It was simply a sun-dial. Across the face ran a little bar of steel, from which ran an upright wire. 'You work it this way, see?' she said, as twisting the stem-winder, she made the little steel bar turn in every direction; 'then you hold it up to the sun, and, wherever the shadow of the wire falls, that is the time of day.' 'But are there no works of any kind?' 'No; ain't there works enough there for you? What do people want for a dollar, anyhow?' The reporter asked if any gold watches were given away at all, and she said yes, but only on the terms given in the *Farm and Household*, a copy of which she produced. It was stated in the latter that a $25 gold watch would be given away to anybody organizing a club of twenty-five subscribers—in other words, for $25. She showed the watch, and it certainly was a watch, and probably cost, wholesale, $7 or $8—perhaps less. The reporter then asked to see the 'miniature upholstered parlor set,' and she produced a pasteboard box about five inches long, two inches high and two inches wide. Taking off the cover she disclosed three little toys, upholstered and framed as stated in the advertisement. At wholesale they would probably cost about four cents each. 'You see, we don't offer a parlor set,' she explained, 'only a miniature set, and there it is.' Perhaps the funniest part of the whole scheme is the periodical itself. The family paper, each issue of which 'is beautifully illustrated, containing stories of fascinating interest, and a rich variety of funny sketches, anecdotes, news, condensed notes on fashion art, industries, literature, etc.,' is got out by what is known to printers as a 'boiler plate factory.' From the first page to the last (and there are sixteen pages altogether) it is 'plate' matter. Nothing whatever is set up save a few lines on the 'editorial' page. A competent printer, who inspected the paper, is authority for the statement that $60 would more than cover the cost of getting it out each month. In case any one is foolish enough to send $25 in subscriptions, and gets a 'solid gold' watch, Mr. Gray and the 'Co.' will have a clear profit of about $18. On the stem-winders the profit will be about 95 cents, and on the miniature parlor set at least 75 cents. Against this is the cost of getting out the paper—about one cent each copy. 'Is Mr. Gray not afraid of getting into trouble over such a scheme as this?' asked the reporter. 'By no means,' was the reply. 'We do all that the advertisement calls for, and what more can any one expect?' 'How about complaints? Do you receive many from your subscribers?' 'Yes, we do receive some,' was the reply, 'but then we do not mind them. By-the-way, won't you please tell me who you are?' 'Certainly;' and the reporter informed her. Before she had time to recover from the shock he had made his escape. Mr. Gray was invisible during the interview."

URUGUAY VINEYARDS.—At Santa Rosa, in the Republic of Uruguay, 200,000 vine shoots were planted this year. Next year there will be twice as many planted. They grow luxuriantly, and bear abundantly in that part of Uruguay, and are profitable to their owners.

NO FEATHERS.—Some time ago several women in England started a society, the members of which bound themselves "to refrain from wearing the feathers of any bird not killed for purposes of food, the ostrich only excepted." The society grew very greatly in numbers, and its good influence is shown by the letter of a professional fowler to a newspaper. A year ago he says he was asked to get 8,000 Kittiwake gulls, but this year he has not shot one. The gull is a beautiful and useful bird, and the fashion of wearing its plumage seriously threatened its extermination.

EXPENSIVE COLLECTION.—An Augusta, Me., man bought a machine from a Boston firm, and soon had occasion to send for a small spring to replace one that became broken. The spring came along, followed by a bill—two cents for the spring, two cents for the postage—a total of four cents. It cost the firm two cents postage to send the bill, the Augusta man paid two cents more in sending the money, and then the Boston concern expended another two cents in sending a receipted bill, so that, all told, it cost six cents to collect two.

BRIGHT STORIES.

THE ROBBER OF PIROCHE.

By Alexander Dumas, Fils.

Do you know Piroche? No? Neither do I; therefore I will not abuse your confidence by describing it. Then descriptions are always tiresome—I prefer to leave them to the imagination of the reader. It gives him something to do, flatters him, makes him think if he can do so much he can do the rest.

We all have a gallery of pictures in our minds and hearts, either of sunshine or of shadow or valley, sea or plain, which will serve for any story ever written.

Thus, I will only say that at the moment when this story I am going to tell you commenced it was midday in the month of June, and the road we are going to travel was bordered on the left by tall reeds, on the right by the sea. It is useless to say the sky was blue, the sea brilliant, rolling in long, lapping waves, and the road hot and dusty.

I will only add, this road wound along the coast of Bretagne from 'Poterie to Piroche, a little village like all other villages of that period, and two peasants, father and son, mounted on two asses, were trotting along this road very comfortably for the asses as well as the peasants.

"Will we get there in time?" said the son.

"Yes, it is at two o'clock," replied the father, "and the sun now marks a quarter to twelve."

"I am anxious to see it," said the son.

"Yes, I can well believe you."

"Will he be hanged with the armor on?"

"Yes, I am told so."

"What in the devil made him think of stealing a suit of armor?"

"It is not so difficult to think of as—"

"To do," interrupted the son, who wished to have his share in the joke. "Was the armor very handsome?"

"Magnificent—steel inlaid with gold."

"Was he taken in the act of carrying it off?"

"Yes; you understand the armor could not be moved without a terrible clanking, and the noise woke up everybody in the chateau."

"Then they caught him?"

"Not at all; they were afraid."

"Naturally—people are always afraid in the presence of robbers; without that there would be no advantage in being a robber."

"No; but these people didn't think he was a robber."

"What then?"

"A ghost. The rascal carried the armor in front of him, holding it high above his head. It looked like a gigantic giant walking through the corridors; besides, the scamp made a hoarse, groaning noise behind it. You can imagine the fright of the servants, but unfortunately for him it aroused the lord of the chateau, who was afraid of neither the living nor the dead; he arrested the robber and handed him over to the proper justice."

"And the proper justice?" interrupted the son.

"Ordered him to be hanged in the armor he had stolen."

"Why was that clause in the judgment?"

"Because the Lord of Piroche is not only a brave soldier, but a man of wit and intelligence. You know everything that belongs to a hanged person becomes a talisman of good luck to those who possess it; that is why the Lord of Piroche ordered him to be hanged in the armor. After death it was to be returned to him. He wanted it as a talisman in the next war."

"That was ingenious."

"Yes, I should say so."

"Come, let us make haste; I am anxious to see this hanging."

"We have plenty of time; don't fatigue our beasts, for we must return home to-night."

Thus father and son chatted, and in half an hour they reached Piroche.

As the father said, they were in time (fathers have the privilege of always being right). There was a great crowd in the grand place in front of the chateau, where the scaffold had been erected—a beautiful gibbet placed upon it of superb oak wood. Ma foi, it was rather low, but then it was for a low, degraded criminal, yet sufficiently high for the rope to do its deadly work, twisting and turning in the breeze like a thread from a needle. The criminal was going to have a beautiful view in his last moments, if that would be any consolation to him, which I very much doubt. A soft, azure sky, a calm, silvery sea on which a white sail was gliding like an angel flying toward heaven, its long white robe still touching the earth it was leaving.

Our peasants approached the scaffold as near as possible, so as to see all that passed, and waited with the others, having the advantage of being mounted on their asses, where they could see better and with less fatigue. They had not long to wait. At twelve o'clock precisely the door of the chateau opened and the prisoner appeared, preceded by the guards of the Lord of Piroche and followed by the executioner.

The robber was dressed in the armor, mounted upon an ass, his face turned to the tail of the beast and his hands bound behind him. The visor of the armor was lowered so one could not see his face, but you can imagine he was ill at ease and a prey to very sad reflections. They brought him in sight of the gibbet. It was not a pleasant picture outlined against the blue sky.

The executioner placed his ladder to the scaffold, and the chaplain of the Lord of Piroche mounted the stage and began to read the sentence of death. The prisoner never budged; one could have imagined he had played the trick of dying before hanging. They ordered him to dismount from the ass and deliver himself to the halter. He never moved a muscle. We can well understand his hesitation.

Then the executioner took him by the elbows and lifted him to the ground. What a strong old fellow this executioner was! In the meantime, the chaplain had finished reading the sentence, and turning to the criminal demanded:

"Have you anything to say?"

"Yes," replied the miserable wretch, in a low, stifled voice. "I beg for mercy and pardon." This seemed a good joke. The Lord of Piroche shrugged his shoulders and ordered the executioner to do his work.

He tried to make the criminal ascend the ladder, which was not an easy thing to do. It is strange how these people condemned to death will make such a difficulty of dying. The executioner had to resort to the same means he had employed to make him descend from his ass—he took him by the arms, placed him on the third round of the ladder, and pushed him up, amid the "bravos" of the crowd.

Then the executioner placed the running knot at the end of the rope around his neck, and giving him a vigorous kick in the back launched him into space, or rather into eternity. A great shout and shiver ran through the crowd, the condemned balanced two or three minutes at the end of the rope, kicking and twisting as it was his right to do, then hung stiff and motionless.

The crowd regarded him a few moments, the burnished armor glistening in the sun; then they broke up into little groups and departed homeward, all talking of the event.

"Ma foi," said the son of the peasant to his father, "to be hanged for carrying off the armor when he did not get it seems hard. What do you think?"

"I was just asking myself if he had really carried off the armor what would they have done to him? No matter; he has been punished justly, no doubt, but it was not a pleasant thing to see."

Twenty minutes after they entered the village of Piroche, where they expected to rest a few hours and start back late in the evening so as to reach home that night.

Next morning at peep of day two guards came out of the chateau to unhook the dead body and take off the armor of their lord. But they found what they least expected. There were the gibbet and the rope, but where was the body? They rubbed their eyes, thinking they must be dreaming. No, it was really true—there was no body—naturally no armor.

This was very extraordinary; the rope was neither cut nor broken, but just as it was before it received the criminal.

The guards ran to announce the astounding news to their Lord of Piroche, who would not believe them. He must see the fact with his own eyes. He was such a powerful personage he was certain he would find the hanged just where he had ordered him. On reaching the scaffold he was forced to believe as the others. What had become of the dead body? He was surely dead the evening before—hanged in the sight of the whole village.

Perhaps another robber, profiting by the darkness, had carried off the armor, but then he would have left the body, which he evidently had not done.

Perhaps some friends or relations had given the poor wretch Christian burial; but that was improbable, as he had neither friends nor relations; besides, people of such Christian instincts would have taken the body and left the armor. It was all extraordinary they knew not what to believe.

The Lord of Piroche was so troubled at the loss of his armor that he offered a reward of ten gold pieces to the one who would bring back the criminal clothed in his armor. No one appeared. They searched in every direction; found nothing.

Then they ran to a wise man in the city of Rennes, and placed this question before him:

"Can a man hanged by the neck until he is dead escape from the rope that strangled him?"

The wise man demanded eight days for reflection; then he answered "No."

Then they placed another question before him.

"Can a robber hanged for a theft committed during life steal after death?"

He answered "Yes. They demanded how this could be. He replied, "I don't know, but it is true." Now, he was one of the wisest men of his age. They then concluded the robber was a sorcerer. Masses were said to drive away the evil spirit, who would not only avenge himself on the Lord of Piroche, who had condemned him to death, but on all the people who had come to see him die. A month passed; the gibbet remained on the scaffold—gloomy, humiliated and scorned—for never had a gibbet betrayed a like abuse of confidence.

The Lord of Piroche continued to demand his armor from man, the Church, and the devil, but no one answered. He was about to resign himself to this strange event, and the loss resulting therefrom, when one morning he was aroused by a great noise in the place where the scaffold was erected. He started to learn the cause of the tumult, when his chaplain entered in great excitement, and cried:

"Monseigneur, do you know what has happened?"

"No, I was just going to see."

"Well, I can tell you—a miracle—a miracle from God."

"Indeed, what is it?"

"The hanged—"

"Well, what of him!"

"He is there."

"Where?"

"On the gibbet."

"Hanged?"

"Yes, my Lord."

"In his armor?"

"Yes, in your armor, my Lord."

"Ah, that is all right. Is he dead?"

"Stone dead, only—"

"Only what?"

"Did he have on spurs when he was hanged the first time?"

"No, of course not."

"Ah, my Lord, he has on spurs now, but no helmet—that is lying at the foot of the gibbet."

"Come, quick, M. Chaplain, let us go and see."

The Lord of Piroche ran to the place, filled with a curious, wondering crowd. Sure enough, there was the hanged, his neck securely fastened in the running noose, his body dangling from the end of the rope, dressed in the burnished armor. It was prodigious, wonderful. All cried, "A miracle!"

One said "He had repented, and returned to expiate his crime." "He has always been there," said another, "only we could not see him."

"But why has he on spurs?" asked a third.

"No doubt he was far away and wished to come back in a hurry."

"Ma foi! No need of spurs; if I had been in his place I should have never been in a hurry to come back."

Thus they laughed and chatted as they regarded the distorted features of the poor wretch. The Lord of Piroche did not mean to be cheated of his armor this time, so he ordered the body to be taken down, stripped and the armor carried into the chateau. This done, they rehanged the dead body, and the crows admired it so much that in two days it was pecked and mangled in slashes, in eight days it was in rags and and tatters, in fifteen days there was nothing left but the clean picked bones.

Now where had the hanged been in his month of absence? What had he been doing? Why had he escaped, and then returned to be rehanged? I will give you three reasons as they were told to me.

An enchanter said "that the criminal at the moment of dying had willed his body should disappear, should be absorbed by the mind, and as the mind was immaterial, invisible and impalpable, so the body became invisible and impalpable; but the will was not strong enough to produce an eternal absorption, therefore the body had become material and visible again." This was one version.

The theologians said "the criminal was a prey to the most terrible remorse, and not able to endure his agony had returned to expiate his crime." Not very plausible, still it was a Christian reason, and as good Christians we ought to accept it as far as possible.

Another version:—Our two peasants on their return home that evening passed by the gibbet and heard groans, prayers and entreaties. They devoutly made the sign of the cross and asked: "Who is there?" No one answered, but the prayers and groans continued and seemed to come from the dead body hanging above their heads. Then the son took the ladder left by the executioner and climbed up to the height of the criminal and said: "Is that you groaning, my poor man?" "Yes." "Are you alive?" "Yes." "Do you repent of your crime?" "Oh, yes." "Then we are going to take you down. The evangelist commands us to help all who suffer; you are suffering, therefore we are going to help you live and repent. For God loves a repentant soul better than a suffering body."

They took him down and discovered how he had escaped death. The rope instead of clasping his neck had caught on the rim of the helmet and held him suspended without strangling him, and thus he had been able to breathe until these peasants rescued him. They carried him home with them on one of the asses and handed him over to the care of the wife and daughter. He soon recovered; but he who has stolen once will steal again.

As there was nothing to steal in the house of the peasant but his ass and the daughter, the ex-hanged determined to take both; he coveted the beast, and was in love with the daughter, a fair blond beauty of 16. One night he saddled the ass, put on his armor and a pair of spurs to aid his flight, and attempted to carry off the girl in her sleep. She awoke, and her cries soon brought her father and brother; the robber tried to escape, but he was too late. When the young girl told of his infamous attempt, they knew he had not repented and were sorry they had saved such a miserable scoundrel, so they determined to execute justice upon him, but far better than the Lord of Piroche had done.

They bound him to the ass he had saddled, carried him back to the gibbet he had escaped from, and there hanged him till he was dead, taking good care to leave off his helmet this time, placing it at the foot of the gibbet. They then quietly returned home.

This is the third version. I don't know why, but I imagine it is the most reasonable and that you, like myself, will give it the preference over the other two.

As to my Lord of Piroche, having such an excellent talisman of safety he joyously departed to the next war and was the first one killed.

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

December.

MEATS.—Beef, mutton, pork, venison, veal.

POULTRY AND GAME.—Chickens, fowls, duck, geese, turkeys, grouse, capons, hare, partridge, pheasants, rabbits, pea-fowls, guinea-fowl, snipe, widgeon, wild ducks, woodcock.

FISH.—Brill, carp, cod, crabs, perch, salmon, smelts, soles, sprats, tench, turbot, whiting, halibut, sturgeon, oysters.

PRACTICAL RECIPES.

PEANUT SOUP.—Shell enough nuts to fill a half pint cup and pound them up fine, add to them two heaping teaspoonfuls of flour and mix well, then add a pint of oysters; boil up and add a pint and a half of hot water and a red pepper cut in two. Boil up and serve.

CLAM FRITTERS.—Strain the juice from the clams, and chop them up fine. Beat up three eggs very light and stir them into the clams; cut up enough parsley to make a teaspoonful, and add it to the clams with salt, pepper and a little grated nutmeg; stir in a cupful of cream and slowly dredge with flour until it is the consistency of fritters. Have a pan very hot and put in it a mixture of half butter and half lard, let it boil, then drop in the fritter batter, a spoonful at a time; brown, drain on coarse brown paper and serve very hot. Use about twenty-five clams.

ROAST BEEF AND KIDNEY PIE.—Boil a kidney until perfectly tender. Take some cold roast beef bones and put them to boil in just enough water to cover them; cover closely. Add after a while two onions cut in small pieces, a lump of butter and enough browned flour to thicken it slightly, also salt and pepper. Cut up the kidney into small pieces carefully rejecting the tough part; cut up also about once and a half as much cold roast beef as kidney, into small pieces and add it with the kidney to the gravy; first removing the bones, boil up, then set away to cool. Make a rich biscuit dough, butter and line a baking dish with it, fill up with the meat, put on a top crust and bake in a good oven.

VEAL OLIVES.—Cut some slices of the fillet of veal half an inch thick and eight or ten inches long; put them in a dish; sprinkle over them on one side, a little pepper, salt and mace. Roll each piece separately and tie it securely; put them into a stewpan with a little water and butter, and simmer down to a brown gravy; they should be stewed for one hour; when done, dish them and strew fine cracker crumbs over them.

BREAD PUDDING.—Let a pint of milk come to the boiling point, then pour it onto a loaf of dry bread, and when soft beat into it the yolks of six eggs and the whites of three, well beaten; add two tablespoonfuls of flour, nutmeg, and one pound of raisins; boil two hours and serve with sweet sauce.

FRUIT CANDY.—Put three cupfuls of granulated sugar to boil with one cupful of cold water and a table-spoonful of vinegar. Seed a good cupful of raisins, and chop them up together with a cupful of blanched almonds and half a cupful of figs. Butter your pans and sprinkle the fruit thickly over them. When the candy is boiled until it crisps in cold water, pour it onto the fruit and set away to cool.

GOLDEN PUDDING SAUCE.—Cream up half a pound of butter with half pound of sugar; add the yolk of an egg and half a glass of wine, and some grated nutmeg; put it over the fire and stir until it begins to boil, then it is ready.

PRECISELY!—A woman is never so apt to wish she was a man as when she sees one get up from the table, and walk away without a backward look or thought of the dishes—*Atchison Globe.*

REASONING WOMEN.—If you will investigate you will find that the reason some women are superstitious about allowing thirteen to sit down at their table is that they have only a dozen knives and forks.

A SOUND RECOMMENDATION.—A most important feature of the scientific instruction in the lower grade of schools should be the collection of specimens which should form the subject of object lessons.—*Scientific American.*

AUSTRALIAN DEVELOPMENT.—The Australian city of Melbourne, which was founded less than fifty years ago, has already a population of nearly half a million, and stands fifth among the cities of the British Empire. It is now a great shipping port, and its slum quarter is small.

JAPANESE PREFERENCES.—The Japanese, it is said, dislike the Russians and the Chinese, but like the Americans and the English. They are fearful of the aggressions of the Russians in Corea and of the Chinese in the islands that lie south of Japan; but they do not look for any act of aggression by the United States or by England.

TO HARDEN IRON.—Ox hoofs and leather are soaked in French nut oil, and are then burnt, pulverized, and mixed with sea salt and potash. The following proportions are used: 30 per cent. of hoofs, 30 per cent. of leather, 30 per cent. of sea salt, 10 per cent. of potash. This product is said by the *Scientific American* to harden iron all through.

DEER-SKINS.—Though deer are not abundant in the markets, deer-skins may be bought at $1.75 to $2.50 each. An unusually handsome skin may cost $5.00. Taxidermists charge from $3.00 to $6.00 for curing them, and furriers charge as high as $25.00 for the cured hides. The hides of deer shot by pot hunters are often damaged with bullet holes, and are, therefore, cheap.—*N. Y. Sun.*

AFRICAN MAPS.—A missionary on the middle Zambesi, who has traveled over all that region, says the best maps of the country are very inaccurate; that rivers are laid down where they do not exist, and that numerous villages appear where there is not a trace of a human habitation. He says the maps are simply an aggravation to travelers, who are often put to inconvenience by relying on information which they find later to be inaccurate.

THE COLUMBIAN EXPOSITION.

THE WORLD'S FAIR LUMBER AND FORESTRY BUILDING.

The general plan and character of this original piece of architecture have been fully decided upon, the contract for its construction having been let September 24. It is shown in the accompanying engraving. The estimate cost is $100,000, taking into consideration the fact that a large part of the material and some of the work will be contributed. The size will be 200 x 500 feet, and the central height 60 feet. The following is stated officially, descriptive of the building: "It will be one of the unique features of the exposition architecture. Its interior appearance will be as natural as unhewed wood can make it. The pillars supporting the roof will constitute the principal feature of its architecture. They will consist of natural tree trunks from 16 to 20 inches in diameter and 25 feet long. Contributions of tree trunks from each State and Territory will be used. The sides of the building between the supporting trunks or pillars, will be filled in with slabs with the bark off. The window frames will be treated in the same rustic manner as the remainder of the building. The main entrance will be elaborately finished in different kinds of wood, the material and workmanship to be contributed by the woodworkers of the world." The building has been provided for out of appropriations for the architectural department, with which the department of lumber and forestry was merged, by authority vested in the management. When it was found that no direct appropriation had been made for the lumber and forestry exhibit, and that no special managerial head was to be provided, lumbermen all over the country were greatly disappointed; and finding himself placed in a peculiar and somewhat unfortunate position, without being himself responsible, Chief Buchanan set about to accomplish what he could for the lumber and forestry interests. He first engineered the lumber and forestry building through, and subsequently the sawmill building. The former will contain the entire government exhibit of lumber and forestry, with the exception of those things which may properly or necessarily be displayed in the open air. The exhibit will be general and international in its scope, the States and foreign countries all having space properly assigned for adequate representation. The rustic colonnade, which will set off the building, was decided upon a few months ago, and solicitations for tree trunks were early sent out to the different States and Territories. It was stated that the building would occupy a commanding position on the lake shore, and that it would be designed to illustrate in its construction and arrangement the forest wealth of the world. The architecture should be of a rustic character to produce a beautiful and appropriate effect. A prominent feature would be a wide colonnade along the front of the building, facing the lake, and across either end. The supporting columns were to be trunks of trees with the bark on, representing the characteristic woods of the various States and Territories, thus adding to the unique beauty of the structure, creating general interest throughout the country, and furnishing an opportunity for each State and Territory to exhibit specimens of its forest trees, and add character and attractiveness to the forestry exhibit. The trunks were to be from 16 to 20 inches in diameter, and the base tapering gradually, and 25 feet long. Each column should have attached to it by the exposition a tablet on which should be engraved the name of the State or Territory furnishing it, the name of the tree, and an estimate, if furnished, of the approximate quanity of such timber in the State or Territory. Each State board of agriculture was asked to send on the three desired representative tree trunks. Up to the present time a large number of the requests have received assurance or compliance, and while some of the State World's fair boards have not yet been organized, it is known that the rustic columns will be forthcoming in probably every instance. The original plan has been somewhat changed, however. The trunks called for in the letter of solicitation referred to above will constitute the centers of each column, which will be completed by the addition of two smaller trunks, placed one on each side. The colonnade will also be extended along the fourth side of the building, in all probability. Thus the States will be called upon for more than an average of three trunks each. The following list of trees has been suggested by Chief Fernow of the government forestry division, as leaders in a monographic display by different States:

Maine, white pine.	Kentucky, hickory.
New Hampshire, yellow birch.	Ohio, ash.
Vermont, sugar maple.	Indiana, black walnut.
Massachusetts, elm.	Illinois, white oak.
Rode Island, sassafras.	Michigan, beech.
Connecticut, butternut.	Wisconsin, red pine.
New York, black spruce.	Minnesota, basswood.
Pennsylvania, hemlock.	Iowa, post oak.
New Jersey, pitch pine.	Missouri, sycamore.
Delaware, soft maple.	North Dakota, canoe birch.
Maryland, chestnut.	South Dakota, box elder.
West Virginia, black cherry.	Nebraska, black locust.
Virginia, loblolly pine.	Kansas, catalpa.
North Carolina, short leaf pine.	Montana, mountain white pine.
South Carolina, cypress.	Wyoming, lodge pole pine.
Georgia, long leaf pine.	Colorado, Engleman spruce.
Florida, red cedar.	New Mexico, cottonwood.
Alabama, chestnut oak.	Arizona, bull pine.
Mississippi, sweet gum.	Utah, Utah white pine.
Louisiana, Bull bay magnolia.	Nevada, mountain mahogany.
Texas, pecan.	Idaho, Douglas spruce.
Arkansas, red oak.	Washington, canoe cedar.
Indian Territory, bois d'arc.	Oregon, sugar pine.
Tennessee, whitewood.	California, redwood.

The selection of representative trees is a matter of considerable care. Mr. Fernow has evidently undertaken to avoid repetition as much as possible, and when a wood might be chosen by several States as a representative one he has sought to determine which State was pre-eminently entitled to be represented by it, as for example the allotting of white pine to Maine, the former white pine State. Some of the closer details of the building have not been fully worked out, and it has been suggested that each of the several entrances might be finished artistically to represent the woods of a State or region, similarly to the plan decided upon as to the main entrance. Several lumber associations have made inquiry on this subject, and it is believed that each entrance could be very tastefully and appropriately made to represent different lumber sections or interests. With regard to the colonnade fronting the lake, it is thought probable that it will be utilized for an elegant café, and made to form one of the most attractive resorts on the grounds. The statement has been published that the roof of the building would consist of a thatch of straw. On the contrary it will be thatched with tanbark or other similarly appropriate articles. Other rustic exterior details will be fittingly worked out. The procession of flag staffs surmounting the outward portion of the roof suggests a tentative plan to have the woods of all countries indicated by the flags thereof. Each staff will probably fly a national streamer, accompained by state emblems or foreign colors, the whole constituting a very pretty and suggestive display. The frontage of the building, as shown in the engraving, is that facing the lake, the structure at the north end being the dairy building.



THE WORLD'S FAIR LUMBER AND FORESTRY BUILDING.

EXPOSITION NOTES.

The party which, under the direction of Chief Putnum of the department of Ethnology, of the Exposition, has been making excavations of the mounds in Ohio for three months or more, met with rare success on November 14th near Chillicothe, in making one of the richest finds of the century in the way of prehistoric remains. While at work on a mound 500 feet long, 200 feet wide and 28 feet high, the excavators found near the center of the mound, at a depth of 14 feet, the massive skeleton of a man incased in copper armor. The head was covered by an oval-shaped copper cap; the jaws had copper mouldings; the arms were dressed in copper, while copper plates covered the chest and stomach, and on each side of the head, on protruding sticks, were wooden antlers ornamented with copper. The mouth was stuffed with genuine pearls of immense size, but much decayed. Around the neck was a necklace of bear's teeth, set with pearls. At the side of this skeleton was a female skeleton, the two being supposed to be those of man and wife. It is estimated that the bodies were buried fully 600 years ago. The excavators believe they have at last found the king of the mound builders.

Prof. Dyche, of the Kansas University, one of the finest taxidermists in America, is preparing a notable exhibit consisting of about 150 of the largest mammals in the United States, including buffalo, elk, moose, antelope, deer, mountain sheep and goats, wild cats, wolves, bears, etc., etc. The different species of each are represented and almost all of the animals have already been secured.

IN WINTER WEATHER,

Which is dreaded by many people, there is nothing to excite alarm as to health and sickness. The Norsemen, Saxons and Normans in the early history of our ancestry and the Pilgrims and Puritans of New England in the colonial days contended with a worse climate and more uncomfortable conditions, but, nevertheless, were robust and vigorous to a remarkable degree. The coughs, colds and rheumatisms that are charged to the account of winter do not belong there. They are, nine times out of ten, the penalty paid by the sufferer for neglect, carelessness or wilful disregard of nature's laws. Winter, far from bringing pain and ailment, should be the bearer of those splendid physical pleasures which come from free circulation of the blood, a hearty appetite and active, intense exercise. To enjoy perfect health in the winter, and thus to be free from all respiratory and muscular troubles, is a very simple thing to anyone who will follow the precautions laid down by medical science. In the first place, the skin should be kept clean and the pores open. This is best done by a warm bath every day in which a little ammonia or borax has been dissolved in the water. Don't fall into the error so common in England of taking a cold plunge or cold shower. The nervous shock produced does no good to a strong person, and is dangerous, if not injurious, to a weak one. In certain diseases shocks by alternating suddenly the temperature of air or water in contact with the human body are of great benefit, but nearly all other occasions are of more harm than good. A warm bath, with a little ammonia and a soft Turkish towel are the best possible ministers of health. In the second place, do not use too much clothing nor overheavy clothing. The best possible winter suit is the Chinese system of three layers of woolen cloth and two layers of paper. This does not interfere with perspiration and does not allow any sudden change in temperature. Heavy winter coats and overcoats are a snare and a delusion. They superheat the body and produce ten times as many colds as they prevent. The ideal winter apparel in temperate latitudes consists of an undersuit of fine woolen and an outer suit of finely woven cloth with a thin overcoat. This allows a free movement to the transpiration, and, at the same time, keeps the body surrounded with warm air. In the third place, the system must be kept free from all humors and impurities and the vital organs must be in a condition of health and normal activity. This can best be achieved by the regular use of Ayer's Sarsaparilla whenever the organization has fallen below its proper tone. Other remedies may be good in their way, but only this one combines the power of expelling humors on the one hand and invigorating the organic functions on the other. A combination of Honduras sarsaparilla and other alteratives, it exercises the beneficent virtues of all its elements. By cleansing the circulation of all impurities, by stimulating the pancreas, stomach, liver and kidneys, and, above all, by strengthening the great lymphatic system, it changes a person's physical condition from weakness and liability to coughs, colds, rheumatism, neuralgia and sick headache to strength, buoyancy and royal good spirits. When it has once cleansed the organization and the working tissues, when it has restored the vital functions to their proper activity and power, all the ailments charged to drafts, extreme cold, rain and wet become absolutely unknown. Of course it is needless to remark that complete health cannot be secured by the use of Ayer's Sarsaparilla alone. With it there must be cleanliness, proper clothing and a due regard for nature's laws. But thus accompanied, health is an absolute certainty, and its happy possessor can pass through any winter, no matter if it be in the Arctic circle, and never suffer from the ailments so common to those who live from day to day without a thought as to their physical well-being.

BUSINESS NOTES.

A GREAT BATTLE SHIP.

AMERICAN CHAMPAGNE AT THE LAUNCH OF THE MONTEREY.

Irving M. Scott of the Union Iron Works shows himself to be enthusiastic in his State pride and patriotism. By his genius and hard work the great Iron works under his charge have been developed until they can not only compete with the great factories of the East, but can underbid them. Several great vessels for the United States Navy have been built at the Union Iron Works, and all are eminently satisfactory. An event that happened recently indicates Mr. Scott's fidelity to his State. When the great coast defense vessel, the Monterey, was about to be launched, Mr. Scott was besieged by the irrepressible agents of wines, each one anxious to have the kind he sells used at the launch. To a purveyor of French Champagne Mr. Scott sent the following characteristic and brilliant note in response to a request to use a particular kind of foreign wine at the launch: *Gentlemen:* Your letter of April 24th is at hand. We notice that you say that great men like Chauncey M. Depew, Andrew Carnegie, Cornelius N. Bliss, members of the Cabinet, Senators and others, only use a certain French champagne. While it would give me great pleasure to have them continue the old diet, the new dispensation and law of progress requires everyone to make a change, especially if it is for the better, and I would like to say that such distinguished gentlemen as honor me with a visit will drink only the royal wines of California, made from the pure juice of the grape, and as its name indicates, Eclipses all other brands. My patriotism and loyalty to my State, and my faith in the McKinley bill, all require me to use California prod-

BUFFALO LITHIA WATER

For BRIGHT'S DISEASE OF THE KIDNEYS, THE GOUTY DIATHESIS, Etc.



Dr. WM. A. HAMMOND'S Sanitarium for Treatment of Diseases of Nervous System, 14th Street and Sheridan Avenue, Washington, D. C.

Dr. WM. A. HAMMOND,

WASHINGTON, D. C.,

Surgeon-General U. S. Army (retired), formerly Professor of Diseases of the Mind and Nervous System in the University of New York, etc., says:

"I have for some time made use of the

BUFFALO LITHIA WATER

in cases of affections of the Nervous System, complicated with Bright's Disease of the Kidneys, or with a Gouty Diathesis. The results have been eminently satisfactory. Lithia has for many years been a favorite with me in like cases, but the

BUFFALO LITHIA WATER ACTS BETTER THAN ANY EXTEMPORANEOUS SOLUTION

of the Lithia salts, and is, moreover, better borne by the stomach. I also often prescribe it in those cases of cerebral hyperæmia, resulting from over mental work—in which the condition called nervous dyspepsia exists—and generally with marked benefit."

WATER IN CASES OF ONE DOZEN HALF GALLON BOTTLES, $5.00, F. O. B. HERE.

☞ For sale by all first-class Druggists, and Pamphlet sent to any address.

THOMAS F. COODE, Proprietor, Buffalo Lithia Springs, Va.

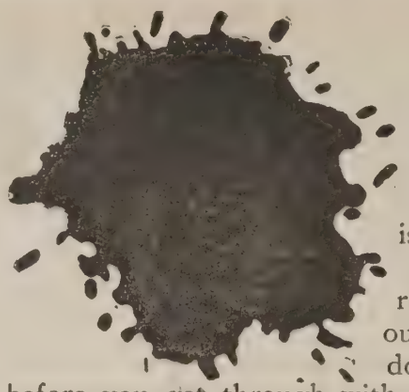
☞ Please mention the AMERICAN ANALYST.

ucts on every occasion, and the great battle-ship to-morrow will be christened by the product of our soil, as she herself is the work of our own mechanics' hands. Yours truly,

IRVING M. SCOTT,
Union Iron Works.

NOT WHOLLY DESIRABLE.—Electrician Nikola Tesla says the time will soon come when a ship will be able to telegraph to either shore of the sea she is traversing without cable or indeed any direct connection. This will deprive ocean voyaging of one of its chief advantages to many tourists.

RAIN-MAKING EXPERIMENTS.—A letter from a citizen of Texas who witnessed the recent Dyrenforth rain-making experiments in that State pronounces them the most veritable humbugs and absurd waste of public money of which it is possible to conceive. He says that the trial party were shrewd enough not to begin operations before the season when, from time immemorial, rain has come down plenty and often in that region. In his belief, too, unwarranted claims and representations were sent out as to the results of the experiments.—*Boston Journal.*



The Dearest Spot on Earth

is the spot that's washed out *without Pearline*. It costs in clothes, in the rubbing and scrubbing that wears them out quickly; it takes twice the time, and double the labor. It's expensive washing before you get through with it—and the cost comes home to *you*, no matter who does the work.

Pearline saves money by saving work, wear, and time. It hurts nothing; washes and cleans everything. It costs no more than common soap, but it does more. It's cheap to begin with—but it's cheapest in the end.

Beware of imitations of PEARLINE which are being peddled from door to door.

106 JAMES PYLE, New York.

UNEXPECTED RESULT.—"There," he said fondly, "just to show you how much I thought of you I took your picture with my new instantaneous camera. Here it is." "Do you think it looks like me?" she inquired, almost tearfully. "Why–er–yes, of course." "Then all is over. I cannot be yours. It must be my money and not myself that you seek."

THE COLUMBIA DAILY CALENDAR.—An old friend in a new dress, and an article that has come to be one of the indispensables of an editor's desk, comes to hand in the Columbia Daily Calendar for 1892. The calendar is in the form of a pad containing 367 leaves, each 5½ x 2⅝ inches; and each slip bears a short paragraph pertaining to cycling or some kindred subject, and at the bottom of each leaf is a blank for memoranda. The stand is an entirely new departure, being made of sheet metal finished in ivory black, and is very compact. This is the seventh issue of this now well-known calendar, yet all the matter is fresh and new.

LARGE PANES OF GLASS.—The largest plate of glass in this city and in the State is in the Eleventh Street window of Robert J. Thompson, at the southwest corner of Eleventh and Chestnut Streets. The size of the plate is 8 feet 4 inches by 16 feet 8 inches, and it was manufactured at Kokomo, Ind. The firm which had the contract for furnishing the glass first placed its order with a Pittsburg Company, which was unfortunate enough to break two plates of that size in preparing them for transportation. There are several others which nearly equal this one in size. There is one 194 by 100 inches, another 140 by 144, and one which was recently replaced, an infuriated bull having gone through its 198 by 98 inches. The largest plate of glass in the country is in stock at Kokomo, and is 16 feet 8 inches, by 11 feet 8 inches.—*Philadelphia Record.*

Happy and content is a home with "The Rochester; a lamp with the light of the morning. Catalogues, write Rochester Lamp Co., New York.

Armour's

Extract of BEEF.

The best and most economical "Stock" for Soups, Etc.

One pound equals forty-five pounds of prime lean Beef.

Send to us for our book of receipts, showing use of **ARMOUR'S EXTRACT** in Soups and Sauces.

ARMOUR & CO., Chicago.

INDIAN RAIN-MAKERS.—They are beginning to have faith in the efficacy of rain-making expedients in Upper Burmah. Rain has been badly needed there. A while ago Lieut. Pilcher was ordered to ascend a hill 1,300 feet high and fire off two heavy charges of gun cotton of thirty and forty pounds each. The sky had been cloudless before, but the explosions were followed by gathering clouds and a copious fall of rain. The people there are convinced that there is abundant rain in Upper Burmah if it can only be shaken out.

Cleveland's Baking Powder

Does not contain ammonia;
Costs no more than ammonia powders;
It goes farther;
It is pure and wholesome.

You should use it.

Fine Table Wines

From our Celebrated Orleans Vineyard.

Arpad Haraszthy & Co.

Producers of the

ECLIPSE CHAMPAGNE,

530 Washington St. SAN FRANCISCO.

GROWERS OF

Chateau d'Orleans, the highest grade Claret made in America.

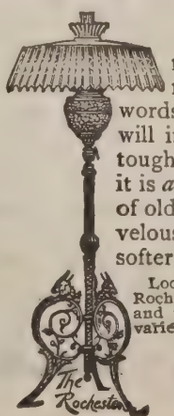
Cabernet Blend, the richest and finest of Table Clarets.

O V Chablis, possessed of all the delicate pungency of its French counterpart.

O V Sauterne, with the exact character and *Seve* of imported Sauternes.

The **Chateau d'Orleans** and **O V Chablis** are sold in glass only.

"Seeing is Believing."



And a good lamp must be simple; when it is not simple it is not good. *Simple, Beautiful, Good*—these words mean much, but to see "The Rochester" will impress the truth more forcibly. All metal, tough and seamless, and made in three pieces only, it is *absolutely safe* and *unbreakable*. Like Aladdin's of old, it is indeed a "wonderful lamp," for its marvelous light is purer and brighter than gas light, softer than electric light and more cheerful than either.



Look for this stamp—THE ROCHESTER. If the lamp dealer has n't the **genuine** Rochester, and the style you want, send to us for our new illustrated catalogue, and we will send you a lamp safely by express—your choice of over **2,000** varieties from the *Largest Lamp Store in the World.*

ROCHESTER LAMP CO., 42 Park Place, New York City.

"The Rochester."

GRANT.

SHERMAN.

SHERIDAN.

McCLELLAN.

GEN. GRANT'S MEMOIRS.

Original $7 Edition for 30 Cents.

NO book, excepting the Bible, has ever had such a sale in the United States as General Grant's Memoirs. 650,000 copies have already gone into the homes of the rich, but the subscription price of $7.00 has placed it beyond the reach of people in moderate circumstances. **If 650,000 people have been willing to pay $7.00 for Grant's Memoirs, there must be a couple of million people in the United States who want them, and will jump at the opportunity** to buy them at the low figure here offered.

We will send you General Grant's Memoirs, publisher's original edition, best paper, cloth, green and gold binding, hitherto sold by subscription at $7.00,

FOR 30 CENTS!—FOR 30 CENTS!—ABSOLUTELY ONLY 30 CENTS!

and absolutely a proposition such as has never been made in the history of book publishing. The two splendid volumes of Grant's Memoirs, of which 650,000 copies have been already sold—not a cheap edition, but the best—for 30 cents; provided you send your subscription of $1.00 to the **AMERICAN ANALYST** one year, and also a subscription of $3.00 for the **COSMOPOLITAN MAGAZINE,** the brightest and cheapest of the great illustrated monthlies, itself equal to the best $4.00 magazine.

The **COSMOPOLITAN** is enabled to make this offer because of **the purchase of 600,000 volumes at a price which even publishers would deem impossible, and with the idea of running up its circulation to half a million copies.** By contract with the **COSMOPOLITAN,** and at no profit to us, we are enabled to offer our readers a share in the low price obtained through the largest purchase of books ever made in the history of the world.

If, however, you have Grant's books, our offer will permit you to take instead,

GEN. SHERMAN'S MEMOIRS, 2 Vols., sold by subscription for $5.00
GEN. SHERIDAN'S MEMOIRS, 2 Vols., sold by subscription for 6.00
GEN. McCLELLAN'S MEMOIRS, sold by subscription for . . 3.75

All of these are bound in cloth, green and gold, in uniform style with Grant's Memoirs.

Send us at once $3.00 for year's subscription to the **COSMOPOLITAN,** $1.00 for year's subscription to the **AMERICAN ANALYST,** and 30 cents for a set of Memoirs—$4.30 in all—to which add postage on the particular set of Memoirs selected.

WHY DO WE MAKE THESE GRAND OFFERS?

Simply because we want every intelligent family to keep well informed as to the popular science of this progressive era. We publish the **only popular journal on this subject—THE AMERICAN ANALYST.** Its subscription list is already very large; but we want at least **Fifty Thousand additional subscribers before January 1, 1892.** We know that, if we shall get them, we shall be able to hold most of them as permanent readers of our periodical. So at present sacrifice and at great cost, we have entered into a combination. The **COSMOPOLITAN** is the brightest and cheapest of the great illustrated monthly magazines; it gives annually 1,536 pages by the ablest writers, and over 1,200 illustrations by the ablest artists; and is just as interesting to the young boy or girl as to the oldest grey head. Now, then, we ask you to send us merely $4.30, and, on receipt of same, we will mail them to you regularly for **one year,** and will also send you making no charge for the books) a set of **GENERAL GRANT'S MEMOIRS,** or either of the other works that you may select. **NO SUCH OFFER AS THIS WAS EVER MADE BEFORE BY ANY PUBLISHER SINCE TIME BEGAN!**

UNLESS OTHERWISE DIRECTED,

we shall invariably ship the books by express, charges to be paid by the receiver. If you wish the volumes forwarded by mail, you must distinctly say so at the time when you send us your address and the Money; and you must also enclose postage to prepay the packages at the following rates: **GRANT'S MEMOIRS,** 96 ozs., 48c.; **SHERMAN'S MEMOIRS,** 92 ozs., 46c.; **SHERIDAN'S MEMOIRS,** 84 ozs., 42c.; **McCLELLAN'S MEMOIRS,** 48 ozs., 24c. The government rate for postage on books is one-half cent per ounce. The **COSMOPOLITAN** and **AMERICAN ANALYST** are sent to subscribers free of postage.

SEND ALL ORDERS ADDRESSED

THE ANALYST PUBLISHING CO.,

19 Park Place, New York.

HARTSHORN'S SELF-ACTING SHADE ROLLERS

NOTICE SCRIPT NAME OF Stewart Hartshorn ON LABEL, AND GET THE GENUINE HARTSHORN

THE New Model "HALL"



A Perfect Typewriter. Best Manifolder. Terms to Agents Liberal. Portable. Inexpensive. Writes All Languages. *Read Mr. Howell's Opinion.*

"I wish to express my very great satisfaction with the Hall typewriter. Impressions and alignment are both more perfect than any typewriter that I know, and it is simply a pleasure to use it. It is delightfully simple and manageable."

(Signed) W. D. HOWELLS.

Send for Catalogue and Specimens of work.

Address N. TYPEWRITER CO., 10 Temple Pl., BOSTON.

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,

HOWARD STREET, BOSTON, MASS.

SWIFT'S

CHOICE

Chicago Dressed Beef

AND

MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,

UNION STOCK YARDS,

CHICAGO, ILLS.

EVERY one in need of information on the subject of advertising will do well to obtain a copy of 'Book for Advertisers," 368 pages, price one dollar. Mailed, postage paid, on receipt of price. Contains a careful compilation from the American Newspaper Directory of all the best papers and class journals; gives the circulation rating of every one, and a good deal of information about rates and other matters pertaining to the business of advertising. Address

ROWELL'S ADVERTISING BUREAU,
10 Spruce St., New York.

$5, $10 and $20

CONFEDERATE BILLS,

only five cents each. AGENTS WANTED.

SOUTHERN STAR, Atlanta, Ga.



Just a word with you.

TWO GOOD JOURNALS

FOR THE PRICE OF ONE.

We Offer that Popular Farm Journal,

— THE —

FARM AND FIRESIDE

TOGETHER WITH THE

AMERICAN ANALYST

Both papers one year, for only $1, the regular price for this journal alone.

To accommodate our rural subscribers, we have made such arrangements with the publishers of **Farm and Fireside** as enable us to offer that great journal **Free** for one year, to all who send the regular price for one year's subscription to this paper.

A MILLION PEOPLE

Read each and every issue of **Farm and Fireside**, a large, 16-page, 64-column journal, issued twice a month at **Philadelphia, Pa. and Springfield, Ohio.** It is the handsomest, best and most popular agricultural and home journal in the United States, leading all others in circulation and influence, with nearly **250,000 subscribers**, and is recognized by leading agriculturists as an authority on all that pertains to the farm. **Farm and Fireside** should be on every farm and at every fireside. It will amuse, interest, entertain and instruct every member of the household; is a welcome visitor in every family, gives a greater amount of reading matter, and is worth more than most journals costing several times as much. Thousands of ladies are regular subscribers because of its interesting and valuable Household department. Handsomely illustrated.

It will pay you to accept this offer at once.

Remember the **Farm and Fireside** and the **American Analyst**, both one year for only $1. Send all orders to

THE AMERICAN ANALYST,
19 PARK PLACE, N. Y.

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.

Pure Lager Beer,

"IMPERIAL" and "CULMBACHER"

Brewed & Bottled SPECIALLY FOR HOTELS, CLUBS AND PRIVATE FAMILIES

BY

Beadleston & Woerz

291 W. 10th St. New York.

Orders by Postal Card promptly attended to.

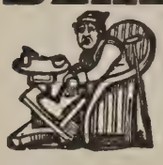
We can save you Fifty Dollars when you Build. See



A complete set of Plans to build from, simply state about price of dwelling desired. 25 cts. in stamps. Our book "Beautiful Homes." 25 cts. Our monthly book "The National Builder," 25 cts. Address

The National Builder, Adams Exp. Bldg., Chicago, Ill.

BLAIR'S PILLS.



Great English Remedy for GOUT, RHEUMATISM and KIDNEY COMPLAINTS.

SURE, PROMPT and EFFECTIVE.

Large Box, 34; Small, 14 Pills.

At all Druggists, and

224 WILLIAM STREET, NEW YORK.

THE ORIGINAL AND GENUINE (WORCESTERSHIRE SAUCE).



LEA & PERRINS' SAUCE

In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—

Lea & Perrins

Beware of Imitations; see that you get Lea & Perrins'

For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS, NEW YORK.

RHEUMATISM AND NEURALGIA are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,
184 Greenwich St., N. Y.

GOITRE, or THICK NECK.

I have a positive, speedy, cleanly, harmless and almost inexpensive cure. Come or write to me at 28 Arlington Court, CLEVELAND, Ohio. It is no iodine smear. Cure made permanent.

Dr. J. CASKEY.

FORTY DOLLARS FREE.

How many words can you make using only the letters in the words **"Hat Identifier?"** First prize, $25; second prize, $10; third prize, $5; fourth prize, one dozen "Identifiers." Send a DIME for rules governing contest and sample "Identifier" to ILLINOIS METAL CO., Royal Insurance Building, Chicago, Ill.

A COLLEGE EDUCATION FREE!

In one of the oldest, most prominent Colleges in the country, **ABSOLUTELY FREE.** A chance of a lifetime. Do you want it? You do not need to invest a dollar. Write for particulars to one of the brightest and most original illustrated monthlies in America. Address,

BUSINESS WORLD, DETROIT, MICH.

GOLD MEDAL, PARIS, 1878.



W. BAKER & Co.'s Breakfast Cocoa

from which the excess of oil has been removed,

Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

TABASCO PEPPER SAUCE,

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced by connoisseurs to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY'S SON,

NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

ESTABLISHED IN LONDON, 1831.

DEAN'S PATENT Ardenter Mustard



W. G. DEAN & SON,
361 & 363 WASHINGTON STREET; 84, 86, & 88 NORTH MOORE STREET, N. Y.

AMERICAN ANALYST CLUB RATES.

WE have made arrangements by which we can furnish to our readers any of the periodicals named below at a club rate, with the AMERICAN ANALYST, at a considerable saving. Should any periodical not mentioned be desired, or several of the journals, drop us a postal card and we will give you a rate promptly. For sample copies address the publishers. Terms strictly cash, in advance.

	Publishers' Price.	Our Price, including AMERICAN ANALYST. One Year.
Arthur's Home Magazine	$1.50	$2.35
Babyhood	2.00	2.50
Century Magazine	4.00	4.50
Christian Herald, N. Y	1.50	2.00
Christian Union, N. Y	3.00	3.50
Cosmopolitan Magazine (See our Premium Offer.)	3.00	3.25
Cottage Hearth	1.50	2.00
Current Literature	3.00	3.50
Demorest's Magazine	2.00	2.50
Family Story Paper	3.00	3.25
Farm and Fireside	.50	1.40
Fireside Companion	3.00	3.50
Forum	5.00	5.25
Frank Leslie's Illustrated Newspaper	4.00	4.50
" " Popular Monthly	3.00	3.50
Garden and Forest	4.00	4.25
Godey's Ladies' Book	2.00	2.50
Golden Days	3.00	3.50
Good Housekeeping	2.40	3.00
Harper's Bazaar	$4.00	$4.50
" Young People	2.00	2.50
" Weekly	4.00	4.25
" Magazine	4.00	4.25
Home Magazine (Mrs. Logan's)	.50	1.25
Judge	5.00	5.00
Ladies' Home Journal	1.00	1.75
Ledger, New York	2.00	2.50
Life	5.00	5.50
Lippincott's Magazine	3.00	3.25
Magazine of American History	5.00	5.00
New York Weekly	3.00	3.50
Our Day, Boston	2.50	3.25
Outing	3.00	3.50
Peterson's Magazine	2.00	2.50
Popular Science Monthly	5.00	5.25
Puck	5.00	5.00
Review of Reviews	2.00	2.75
Scientific American	3.00	3.50
Scribner's Magazine	3.00	3.25
Youth's Companion	1.85	2.50

ADDRESS THE ANALYST PUBLISHING CO., 19 Park Place, New York.

FOR THE SPEEDY RELIEF OF

NERVOUS HEADACHE AND BRAIN FATIGUE.

WARNER & CO.'S EFFERVESCING



Useful in Nervous Headache, Sleeplessness, Excessive Study, Over Brainwork, Nervous Debility, Mania, etc.

DOSE.—A heaping teaspoonful in half a glass of water, to be repeated once after an interval of thirty minutes, if necessary. Each teaspoonful contains 30 grs. Bromide Sodium and 1 gr. Caffein.

It is claimed by some prominent specialists in nervous diseases that the Sodium Salt is more acceptable to the stomach than the Bromide Potassium. An almost certain relief is given by the administration of this Effervescing Salt. It is also used with advantage in INDIGESTION, DEPRESSION following alcoholic and other excesses, as well as NERVOUS HEADACHE. It affords speedy relief for MENTAL and PHYSICAL EXHAUSTION.

PREPARED ONLY BY

WM. R. WARNER & CO.

MANUFACTURERS OF SOLUBLE COATED PILLS,

PHILADELPHIA AND NEW YORK.

Registered July 20, 1886.

PUBLICATIONS OF THE

ANALYST PUBLISHING CO.

THE AMERICAN ANALYST. Weekly. Every Thursday. $1 per year.
THE ROOFER AND TINNER. Monthly. 15th each month. $1 per year.
THE LEATHER MANUFACTURER. Monthly. 1st each month. $3 per year.

Reliable agents and representatives wanted everywhere on liberal terms. Address

ANALYST PUBLISHING CO.

19 PARK PLACE, NEW YORK.

GLENN'S SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,

C. N. CRITTENTON,
115 FULTON STREET,
NEW YORK.

IF you wish to advertise anything anywhere at any time write to GEO. P. ROWELL & CO., No. 10 Spruce St., New York.

ARROWHEAD HOT SPRINGS,
CALIFORNIA.

I MOST respectfully invite physicians of the East to write to me for information concerning this famous Southern California resort. The hot mineral water mud baths, and climate are unequalled in America. Diseases of the throat, lungs, liver, stomach and kidneys, nervous and skin troubles and rheumatism, are the ailments successfully treated. The hotel contains 125 rooms, is first-class, and lighted throughout with incandescent lights. Elevation 2,000 feet. Address,

H. C. ROYER, M. D.,
Arrowhead Springs, San Bernardino Co., California.

"BILLET"

are

Carefully Selected
French Sardines,
Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS

25c. THE DAISY STAMPING OUTFIT. 25c.

STAMPING BY AN ENTIRELY NEW PROCESS. No more ironing or cleaning of patterns, no powder to use. Our Outfit has **OVER FIFTY NEW DESIGNS**—Children, Birds, Animals, Flowers, Leaves, Ferns and Mottoes in great variety; Borders in rich styles, and a complete Alphabet, together with a bottle of **STAMPING FLUID,** which makes an instantaneous impression, and is absolutely certain, cleanly and easy to use. Every lady can do her own stamping at home. **GREATEST BARGAIN EVER OFFERED.** No other outfit has this Patent Fluid. Designs **SUPERIOR** to many outfits sold for $1.00. We will sell this wonderful Outfit, for a short time only, at **25c. POSTPAID** to advertise our other goods. Send at once. We fill orders promptly. Address

EUREKA MANUFACTURING CO., Hinsdale, Ills.

AGENTS WANTED ON SALARY

or commission, to handle the New Patent Chemical Ink Erasing Pencil. Agents making $50 per week. X318

MONROE ERASER MFG. CO., LA CROSSE, WIS.

AMERICAN ANALYST

A Popular Weekly Analysis, for the Family and Consumer, of Everything Relating to Man's Physical Need and Comfort.

Office, 19 Park Place.

[Entered at the Post Office at New York, as Second-class Matter.]

VOL. VII.—No. 53. NEW YORK, THURSDAY, DECEMBER 31, 1891. WHOLE No. 253

AMERICAN ANALYST.

PUBLISHED EVERY THURSDAY.

Subscription, - - - - $1.00 per year.
Single Copies, - - - - - - 5 cents.
Subscriptions to foreign countries, - $1.50.
Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.
Advertising rates on application.

Published by THE ANALYST PUBLISHING CO.,
H. LASSING, M. D., T. P. McELRATH, } *Editors.*
No. 19 Park Place, ... New York.

CORRESPONDENTS AND EXCHANGES.

Please direct all business communications to
THE AMERICAN ANALYST,
19 Park Place, New York.

CONTENTS.

Annihilating Space 627
Cannibal Plants iv
Domestic Dietetics 626
Editorials 625
Inventions of the Future; The Second Food Exposition; Practical Philanthropy.
Explosions and Rain 626
Freezing a Failure 626

INVENTIONS OF THE FUTURE.

In a recent newspaper interview Mr. Thomas A. Edison, in response to the query whether the inventions of the next fifty years will equal those of the past fifty years, replied: "I see no reason why they should not. It seems to me that we are at the beginning of inventions. We are discovering new principles, new powers, and new materials every day, and no one can predict the possibilities of the future. Take electricity. When we get electricity directly from coal, a lump as big as this tumbler will light and heat a whole house for hours, and a basketful would run a factory a whole day. In the generation of steam we only get 14 per cent. of the energy of the coal. In electricity we get 96 per cent. When we get electrical power direct from coal a few hundred pounds will carry you across the Atlantic and a few basketfuls will take a railroad train from New York to San Francisco. I believe this to be one of the great problems of the future, and I have no doubt but that it will be solved. I have been working on it for years, but I haven't got it yet. When it does come it will revolutionize everything. It will cheapen everything, and it will be the greatest invention of modern times. As it is now we have to burn the coal to get the steam, and the steam gives us the power which runs the dynamo and produces the electricity. We have by no means reached the perfection of the telephone," Mr. Edison went on. "Improvements are being made all the time, and the day will come when every one will have his telephone. Long distance telephoning is growing, and the only restrictions of the possibilities of the telephone is in the sympathetic contact of the electrical wire with the rest of nature. If the single wire could be placed so high above the earth that it would not touch the mountain tops, you could whisper around the world and you could sing a song in London and have it heard in Pekin. Wherever we get the wire comparatively free from contact with the earth, distance seems to make no difference, and on a government line 1,000 miles long over a treeless country in Arizona we got a better telephonic connection than we do now between New York and Philadelphia. If we could have a telephone from the earth to the sun—I mean a wire—we could send sounds there with perfect ease; and with the phonograph, were our language universal, we could make a speech here and have it recorded and reproduced in any of the great planetary bodies."

THE SECOND FOOD EXPOSITION.

We are informed by the management that the preparations for the coming Food and Health Exposition at the Lenox Lyceum by the Retail Grocers' Union have so far advanced as to insure the complete success of that undertaking. The purpose of the management is to make the exposition precisely what it is announced to be and to avoid the exhibits which would not be entirely in keeping with the general purpose of bringing to the favorable attention of the public articles of pure and wholesome food. When publication was first made that a second exposition would be held the officers of the union were overrun with applications from all kinds of people who wished to make exhibits. It was necessary at the outset to determine upon a policy of exclusion, but in the absence of a manager who could be firm and could insist strictly upon this policy regardless of personal feeling, some exhibitors were allowed to believe that they might show their goods at the Lenox Lyceum who really had no business at a food and health show. The management of the exposition this year will differ essentially from that of last year in that no pecuniary gain or compensation can accrue to the manager himself. All that he can get from the exposition will be the credit of having shown to the public a fine display of food products and of pleasing the exhibitors of those products by furnishing them with good company in the exposition. His energies are devoted to this end, and he means to win from those who have entrusted him with the management and with those who may be under his supervision during the exposition a verdict of having done what he promised. Exhibitors promise that the attractions at the coming show will be in no case inferior and in many respects superior to those of last year, and the policy of exclusion will be rigidly applied so as to insure an expositiom that shall be actually one of food and health products.

PRACTICAL PHILANTHROPY.

There was opened on December 21st in Hudson street, in this city, a "New England Kitchen," which, although not exactly a charitable institution, is to be conducted with a view to helping the poor and those who have not the means to cook properly and prepare food. There will be no restaurant in connection with the kitchen, but well-cooked food will be sent out to families desiring it at extremely low prices, thus making the institution self-supporting. Only such food as requires long cooking and which does not lose its nicety of flavor by being kept hot through the day, will be offered for sale. Soups and stews, chowders, beef in various forms, cereals, baked beans, brown bread, and puddings will be among the products offered. Factories and stores, where people work long hours and are not able to get hot lunches at noon, will also be supplied. The food will be prepared by the method advocated by Mr. Edward Atkinson of Boston, who delivered lectures on the subject last Spring at Columbia College. The kitchen will supply vegetable soup at 8 cents a pint, fish chowder at ten cents, pressed beef at 20 cents a pound, cracked wheat at 5 cents a pound, baked beans at 14 cents a quart, bread at 5 cents a loaf, and other things at corresponding prices. The establishment of the present kitchen is due to the exertions of Dr. Thomas Egleston of the Columbia School of Mines. It is the third one started in this country. Two established at Boston under the supervision of Mrs. Ellen H. Richard of the Institute of Technology of that city have had great success.

PROPOSED CHANGE.—Secretary Rusk announces that beginning January 1 the weather forecasts will "in each case cover the time until midnight of the next day," so that "the predictions printed in the morning papers will appear early in the day to which they apply, while those in the evening paper will be for the day after. The public will be informed on the evening before of the expected weather and will be given an improved forecast the next morning if improvement is needed. The forecasters are also encouraged to predict for the second or third day in advance."

READ PAGE 629.

EXPLOSIONS AND RAIN.

SOME CONJECTURES ON A YET UNDETERMINED PROBLEM.

A question still in suspense, and in regard to which no decisive conclusion has been reached, is that of the possible connections between explosions and rainfalls. Observations alternate, for or against. If on one side numerous and very exact coincidences have been remarked, on the other side are recorded many cases in which explosions appeared to have no effect on clouds or mist. From all the experiments can be drawn, at least one conclusion, that the agitation of the air provokes condensation under favorable circumstances only. As I have heretofore remarked, this important question cannot be solved, save by registering with the utmost care all the circumstances which accompany each experiment—temperature, nature of the clouds, nature of the explosions, interval between the first explosion and the beginning of the rain, the extent and duration of the latter. Let me mention two recent observations. Of these the first was communicated by Mr. W. R. Pidgeon to the excellent English review, *Nature:* "On the first of October, at five o'clock in the evening, in the quarries of Penryhn, a great quantity of useless stone was cleared away by a single explosion of five tons of powder. During the entire day a violent wind had been blowing, and the clouds, while heavy, were high, there had been no rain and little sun, and the temperature was quite low. Immediately after the explosion the wind lulled, there was an absolute calm for five or six minutes, and, twenty minutes after, a fine rain began to fall, which became gradually harder and did not stop for an hour and a half. At seven o'clock all the perturbations caused by the explosion had apparently ceased, and the weather became like what it had been all day. The rain was wholly local and did not extend more than six or seven miles from the quarry." The second observation was communicated to me by one of our readers in Bordeaux: "An explosion of gun-cotton took place, about a month ago, at a powder mill in the suburbs of the city. The explosion was felt at a great distance. The sky was cloudy that day, but without rain. Three minutes after the powder went off abundant rain fell." Of course, while admitting that these narratives are exactly true, it is not disrespectful to keep in mind the well-known story of the Academicians and the fish of Frederick II.—a story told with several variations, of which the following is one: A physicist had some friends to breakfast. When the cigars were passed round the company went out and smoked them in the garden. One of the guests, placing his hand accidentally on a glass globe covered with silver foil, remarked, with surprise, that it was warmer on the shady side than on that on which the rays of the sun fell. The savans put their heads together to examine and discuss this singular phenomenon. Plausible reasons were not lacking, but it was finally decided that none of these reasons were satisfactory. They were about to declare that the matter was inexplicable. when the gardener, guessing what they were talking about, approached the group and said: "Gentlemen, I am the cause of the difficulty, for I have just turned the globe round." Examples of this kind multiply. I will try to show one way in which can be explained the action of shocks of the air upon the condensation of watery vapor. I remarked, in the first place, that the effect of an explosion can be perceived at a great distance without any warning to the ear. The great instance of Krakatau will remain memorable. It has not been forgotten that the wave of compression produced by this formidable perturbation was perceived at Paris by a disturbance of the barometer, which was twice manifested, first, for the shortest passage of the wave, and then, some hours afterwards, for the passage over the other part of the great circle passing through Paris and Krakatau. In the next place, we know, by the admirable experiments of Messrs. Aitken and de R. von Helmholtz, that the air can be saturated to excess with vapor, notably if it be thoroughly free from dust; but as soon as the smallest drop forms it enlarges in the twinkling of an eye, and the equilibrium, before unstable, becomes stable by the sudden condensation of all the vapor which has passed beyond the state of saturation. This experiment confirms in a striking manner the theorem demonstrated intuitively by Sir William Thomson, that the tension of vapor in the vicinity of a liquid depends on the superficial curve of the latter. What is wanted by the perturbation of the air is not to produce a working power, but only to start the thing after the fashion of the train of powder which makes a cartridge explode. We know, by the classic experiment of the pneumatic tinder-box, that a compression of the air produces an elevation of the temperature, while an expansion of the air has the effect of cooling the temperature. Assuredly, the variations of temperature caused by an explosion are slight, but nothing prevents our admitting that the cooling is sufficient to cause the saturation to go beyond the point at which it can be held by the air. Dew is formed in some place by the wave of expansion, and the rupture of equilibrium thus begun is bound to increase. This hypothesis is not the only one that can be made. In all hypotheses account must be taken of the fact that explosions act very unequally. When the action of dust can be perceived, as in the case of explosions separated from the smoke in the midst of the surrounding air in unstable equilibrium, the effect, confirmed by the experiments of the laboratory, is undeniable; but in most cases it is impossible to admit that the dust has acted, and we are obliged to explain this rain by the agitation of the air. It is very difficult to appreciate the efficiency of the different actions which can be attributed to this agitation. As I said at the beginning, exact observations are indispensable. I think I have shown that it is not a waste of time to make experiments, if they are made without the experimenter having made up his mind one way or other. Let us hope that in a few years the question of whether explosions can produce rain will be resolved in the affirmative or be finally buried.—*La Nature.*

FREEZING AND FAILURE.

A CURIOUS EXPERIMENT IN FOOD PRESERVATION.

It has long been known that the most perishable kinds of food can be preserved for long periods by freezing. In the Arctic regions, where the natural temperature favors such a course, freezing is relied on to preserve meat for months at a time. The introduction of artificial freezing processes has caused freezing to be utilized in our own more southern latitudes with greater or less success for the same object. A test of the question of food preservation by the above means was recently brought to a striking conclusion. A few days ago, Mr. Edward R. Bell gave a dinner at his residence in this city. As guests there were present Rev. Morgan Dix, D. D., Rev. Halsey Knapp and some other friends. The primal object of the gathering was to test the palatability of a turkey which had been killed ten years ago, and which had been kept frozen ever since. Mr. Knapp had been the custodian of the bird during all those years. The turkey was prepared as a part of the dinner. It was found that the fowl was perfect in shape, and without taint of any sort, but its meat was utterly tasteless and void of all the flavor and juices proper to a well roasted turkey. The fat and juices had entirely disappeared, leaving, only bone and muscular fiber. The prevailing impression as to the inferiority of frozen food products was fully borne out by this interesting experiment. It is known that freezing impairs the flavor of meats, fish, and vegetables, and while it arrests decomposition it does not entirely prevent evaporation and desiccation. Housekeepers who are particular about providing the best beef, fowls, and provisions in general for their tables are very apt to avoid the purchase of any products which have been frozen. For reasonable periods food is kept by cold without freezing, and this is virtually the action of our domestic refrigerators. Absolute freezing with preservation through one or two seasons is not to be commended. —*Scientific American.*

DOMESTIC DIETETICS.

SPECIALLY PREPARED, FROM PRACTICAL TESTS, FOR THE LADY READERS OF THE "AMERICAN ANALYST."

SEASONABLE FOOD.

December.

MEATS.—Beef, mutton, pork, venison, veal.

POULTRY AND GAME.—Chickens, fowls, duck, geese, turkeys, grouse, capons, hare, partridge, pheasants, rabbits, pea-fowls, guinea-fowl, snipe, widgeon, wild ducks, woodcock.

FISH.—Brill, carp, cod, crabs, perch, salmon, smelts, soles, sprats, tench, turbot, whiting, halibut, sturgeon, oysters.

PRACTICAL RECIPES.

MEAT BALLS, WITH WALNUT SAUCE.—Chop fine together half a pound of meat, an onion, parsley, allspice and thyme, and a small quantity of bread-crumbs, two well-beaten eggs, and a little flour to bind them. Make this into balls and fry. Cut in halves four or five English pickled walnuts; place them in a pan on the fire in diluted vinegar; when this is boiling put in the balls, already fried, and then let them simmer for about a quarter of an hour or a little less. Serve hot, with hard boiled eggs cut up, placed around the dish, and parsley to garnish.

BAKED HASHED VEGETABLES.—Take equal quantities of rich vegetables, as carrots, potatoes, beets, cabbages, turnips, etc., which have been parboiled, chop them up and season them highly with pepper and salt, a dash of grated nutmeg, mace, and a little minced lemon peel. Mix all thoroughly, and put it into a buttered pie-dish. Cover with one well-beaten egg, or with finely grated bread-crumbs, and put it into the oven to bake.

FRENCH PIE.—Chop very fine any left-over cold meat, season it highly, moisten it well with gravy, and beat thoroughly; put it in a deep pie-plate, heap mashed potatoes over it, put little bits of butter over the top, and brown in the oven.

CHEESE TOAST.—Toast very brown and crisp some thin slices of bread; grate and slice some cheese and put in the oven in a buttered baking-dish; watch carefully, and when it begins to dissolve stir some butter and a dash of cayenne pepper into it; pour it on the toast and serve at once.

GELATINE CREAM.—Soak three tablespoonfuls of gelatine in two cupfuls of water; when it is soft, put it on the stove, and when it comes to the boil add three tablespoonfuls of sugar, and three well-beaten egg yolks. Take from the fire, beat for a few minutes, and then add the egg whites, well beaten, and a pinch of salt; flavor with vanilla; pour into wet moulds and set away to harden; serve with custard or cream.

WHITE GINGERBREAD.—Half a pound butter, half a pound sugar, one pound flour, grated rind of a fresh lemon, one ounce ground ginger, a grated nutmeg, half cupful sweet milk and a small teaspoonful of soda; mix together the sugar, flour, lemon, spices, and rub the butter into them; warm the milk, dissolve the soda in it, add it to the rest of the ingredients, roll out, cut into square cakes and bake.

APPLE PANCAKES.—One quart milk, three eggs, a little salt, flour, one dozen large apples; make a batter of the milk, eggs, flour and salt; pare, core and chop the apples, add them to the butter, fry in butter, and eat with powdered sugar. If they are not light enough, add one teaspoonful baking powder.

FRUIT BREAD PUDDING.—Make a bread pudding; bake it in a stone dish about half full; when nearly done draw it to the oven door, put a layer of fruit over it and put it back again to bake. When done make a meringue of the whites of three eggs and a little sugar, brown slightly and serve.

LEEK AND POTATO SOUP.—Fry a bunch of leeks in butter until brown; season them with pepper and salt, and pour over them three pints of boiling water; let them simmer for half an hour; add four fine large raw potatoes cut into slices, and boil until the potatoes are soft. Press through a sieve, beat up again, add one pint of boiling cream or one pint of boiling milk, and a lump of butter, and serve.

CHRISTMAS CAKES —Beat till very light one pound of powdered sugar with four eggs; then add one pound of sifted flour. Roll out on a pie-board, sprinkle with aniseed, cut into fancy shapes, and bake in a medium hot oven.

RUBBER FOOT FEVER.—If a man has a corn, says the *India Rubber World*, it can be removed, but if he is suffering from rubber foot fever, no chiropodist can help him, and the only thing to prescribe is liberal bathing of the feet and removal of the cause. Rubbers should only be worn to keep wet out, and the should be removed the moment the wearer gets indoors. Failure to note this gives a man wet feet in a far worse sense than if he waded through mud ankle deep. It was the trouble resulting from forcing the perspiration to soak the stockings and keep the feet perpetually damp that drove rubber-soled boots out of the market. Even loose rubbers are a source of danger and the cause of many more serious colds than they avert.

ANNIHILATING SPACE.

REPORTING AND TYPE-SETTING BY TELEPHONE.

One of the most useful and unique accounts to which the telephone has ever been turned is that adopted by the management of the London *Times*. Wires have been laid in an underground railway tunnel between the *Times* composing room in Printing House Square and the Parliamentary reporter's gallery in the House of Commons. A copy reader is placed at each 'phone and he reads the stenographic "turns" from the note-book as fast as it is possible for the compositors to take them on type-setting machines over in the *Times* building, a mile and a half away. The hearing apparatus is fastened to the ear of the compositor in the same manner as our "Central" telephone offices, and the reader himself must constantly listen for the interruptions and necessary repetitions. The uproar in the regular reporters' room in the House has driven a great many of the readers into other parts of the building. Hence, upon almost any night during the session of Parliament, one may witness the novel spectacle of dual debates in and out of the chamber—the "M. P.'s" and the readers—and it is no hyperbole to say that the elocutionary odds are in favor of the latter. At first the reporters did not approve of the innovation, but when the *Times* men found they could dictate their notes through to the composing room without the labor of transcribing them they quickly availed themselves of the opportunity, though, as a matter of necessity, they receive proofs for correction. Each machine can produce from five to six columns of sold minion a night. Of course errors creep in, but on the whole the scheme works well; and the fact that it enables the *Times* to print in time for the 5 A. M. newspaper trains going to all points of the United Kingdom the whole of debates that are often continued until after 3 A. M. is an earnest of the plans permanancy.

BUSINESS NOTES.

HORSFORD'S ACID PHOSPHATE

For abuse of alcohol. It relieves the depression therefrom. Dr. W. Graeves, Northfield, Minn., says: "I have used it in cases of nervous prostration, and also in combination with other remedies in indigestion, it has proved as satisfactory as could be expected.

SHADE ROLLERS.

Any one who remembers the old-fashioned shade rollers cannot help but feel thankful to Stewart Hartshorn that he invented the self-acting pawl for spring shade-rollers in 1864. This invention revolutionized the shade trade. Although spring shade rollers are now universally used, their introduction was slow, expensive, laborious and discouraging work. How few people who use these shade rollers have any idea of the manifold operations necessary to produce one of these rollers in perfection, of the variety of sources whence the materials from which they are made are drawn, or of the magnitude of the manufactories in which they are prepared. The extensive white pine forests of Michigan, Wisconsin and Canada supply the roller wood. The iron comes from several different States. The spring wire is drawn from steel rods made in England. The hard wood that forms the centre of every spring is brought from Pennsylvania. Copper from Lake Superior and zinc from New Jersey compound the brass that is both ornamental and useful. All these materials are put together in several many-storied factories, each covering large plots of ground, and convenient to wharfage in East Newark, Muskegon and Toronto. In a future number we will endeavor to show how this business has grown from small beginnings to its present magnitude. The moral is: Make what the people want, keep up quality, and have a fair price, you will succeed.

BUFFALO LITHIA WATER

For BRIGHT'S DISEASE OF THE KIDNEYS, THE GOUTY DIATHESIS, Etc.



Dr. WM. A. HAMMOND'S Sanitarium for Treatment of Diseases of Nervous System, 14th Street and Sheridan Avenue, Washington, D. C.

Dr. WM. A. HAMMOND,

WASHINGTON, D. C.,

Surgeon-General U. S. Army (retired), formerly Professor of Diseases of the Mind and Nervous System in the University of New York, etc., says:

"I have for some time made use of the

BUFFALO LITHIA WATER

in cases of affections of the Nervous System, complicated with Bright's Disease of the Kidneys, or with a Gouty Diathesis. The results have been eminently satisfactory. Lithia has for many years been a favorite with me in like cases, but the

BUFFALO LITHIA WATER ACTS BETTER THAN ANY EXTEMPORANEOUS SOLUTION

of the Lithia salts, and is, moreover, better borne by the stomach. I also often prescribe it in those cases of cerebral hyperæmia, resulting from over mental work—in which the condition called nervous dyspepsia exists—and generally with marked benefit."

WATER IN CASES OF ONE DOZEN HALF GALLON BOTTLES, $5.00, F. O. B. HERE.

☞ For sale by all first-class Druggists, and Pamphlet sent to any address.

THOMAS F. GOODE, Proprietor, Buffalo Lithia Springs, Va.

☞ Please mention the AMERICAN ANALYST.

A Tonic

Horsford's Acid Phosphate.

A most excellent and agreeable tonic and appetizer. It nourishes and invigorates the tired brain and body, imparts renewed energy and vitality, and enlivens the functions.

Dr. EPHRAIM BATEMAN, Cedarville, N. J., sasy :

"I have used it for several years, not only in my practice, but in my own individual case, and consider it under all circumstances one of the best nerve tonics that we possess. For mental exhaustion or overwork it gives renewed strength and vigor to the entire system."

Descriptive pamphlet free.

Rumford Chemical Works, Providence, R. I.

Beware of Substitutes and Imitations.

CAUTION:—Be sure the word "Horsford's" is on the label. All others are spurious. Never sold in bulk.

ENGINEER AND SAILOR.—If the blue jacket is to be superseded to a very large extent, as now seems likely, by the machinist, then the navigating officer must needs learn to handle machinery or be displaced by an engineer who has learned navigation and gunnery. For the modern war ship has come to be a machine, or, rather, a collection of machines ; her masts, if she have any, of the "military" type, with no yards across and barren of sails, topped only with nests for observation and light batteries. To place such a craft under the command of a sailor is like putting a sailing ship in command of a machinist.

It's concealed,
but it's there—
ammonia in baking powder
widely advertised as
"absolutely pure ;"
'tis easy to detect it ;

Boil up a heaping spoonful of the powder in a spoonful of water, and smell the steam.

There's nothing to conceal in Cleveland's baking powder; the composition is stated on every label.

The ingredients are all so wholesome we are glad to have people know what they are.



Girls.

BY HELEN EKIN STARRETT, IN *The Forum.*

"Thousands who are now in shops and other organized industries would really prefer work in homes, if only the heavy, grimy, malodorous, *clothes-destroying* work of cooking and laundering were not required and expected of them."

Well—if this is true there's a good time coming for girls and the mistress too ; for women (by millions) are coming to know, that *Pearline* saves the clothes on your back as well as the clothes in the wash ; the paint on your walls—the sheen of silver—the lustre of glass and reduces the labor—drudgery—health breaking—temper and comfort wearing work of washing and cleaning to almost nothing.

Besides—the girl—the mistress—or both—are better satisfied with the results. It cleanses—restores original colors—but hurts nothing, not even delicate skin—luxurious for bathing—be among the bright ones and use *Pearline.*

Beware Peddlers and some unscrupulous grocers will tell you, "this is as good as" or "the same as Pearline." IT'S FALSE—Pearline is never peddled, and if your grocer sends you something in place of Pearline, do the honest thing—*send it back.* 192 JAMES PYLE, New York.

HOARDED TREASURES.—It is estimated that the treasure lying idle in India in the shape of hoards or ornaments amount to $1,250,000,000. A competent authority calculates that in Amrista City alone there are jewels to the value of $10,000,000.

CLAIRVOYANCE.—A girl in Dexter, Me., possesses a faculty which mystifies her friends. When blindfolded and provided with a photograph she can describe the person or object portrayed in the picture, and she will also describe the objects in any picture or print after merely running her finger tips over the surface.

INDIA TEA.—The Chinese tea trade has been greatly injured in recent times by the increase in the use of Ceylon tea in various countries of the world. It is estimated that 100,000,000 of the Chinese people are engaged in the culture, preparation, sale, carriage and exportation of tea, and are adversely affected by the rivalry of other countries.

ABORIGINAL SKULLS.—At the Indian School in Carlisle, Pa., Dr. Boas, the ethnologist, is measuring and examining the red skinned students in order to get their cranial and facial form. Their ears are large, their cheek bones heavy, their eyes small, and their brain of good size. The results of his investigation will be sent to the Smithsonian Institute in Washington.

COLOR OF OXYGEN.—Till recently oxygen was believed to be as colorless in the liquid as in the gaseous form. But the Polish chemist, Olszewski, shows that it is only because thin layers of it have been examined that liquid oxygen has been believed to be colorless. He has succeeded in getting a layer of it 30 millimeters thick, and he finds that it has a bright sky-blue color. The discovery is very important in point of view of the absorption spectrum of oxygen.

THE MOLASSES PROBLEM.—The undivided attention that is now required of every sugar planter to enable him to successfully harvest the present cane crop is diverting attention from the question involved in the caption of this article. It will come up again at the end of the season with as great a force as ever, and it would seem well even now that it should have consideration and that every effort should be made to open up some new market for this large fraction of our sugar crop. There is now a practical loss of the entire value of the molasses to all vacuum pan houses.—*La. Planter.*

Happy and content is a home with "The Rochester ; a lamp with the light of the morning. Catalogues, write Rochester Lamp Co., New York.

Armour's

Extract of BEEF.

The best and most economical "Stock" for Soups, Etc.

One pound equals forty-five pounds of prime lean Beef.

Send to us for our book of receipts, showing use of **ARMOUR'S EXTRACT** in Soups and Sauces.

ARMOUR & CO., Chicago.

Fine Table Wines

From our Celebrated Orleans Vineyard.

Arpad Haraszthy & Co.

Producers of the

ECLIPSE

CHAMPAGNE,

530 Washington St.

SAN FRANCISCO.

GROWERS OF

Chateau d'Orleans, the highest grade Claret made in America.

Cabernet Blend, the richest and finest of Table Clarets.

O V Chablis, possessed of all the delicate pungency of its French counterpart.

O V Sauterne, with the exact character and *Seve* of imported Sauternes.

The **Chateau d'Orleans** and **O V Chablis** are sold in glass only.

GRANT.

SHERMAN.

SHERIDAN.

McCLELLAN.

GEN. GRANT'S MEMOIRS.

Original $7 Edition for 30 Cents.

NO book, excepting the Bible, has ever had such a sale in the United States as General Grant's Memoirs. 650,000 copies have already gone into the homes of the rich, but the subscription price of $7.00 has placed it beyond the reach of people in moderate circumstances. **If 650,000 people have been willing to pay $7.00 for Grant's Memoirs, there must be a couple of million people in the United States who want them, and will jump at the opportunity** to buy them at the low figure here offered.

We will send you General Grant's Memoirs, publisher's original edition, best paper, cloth, green and gold binding, hitherto sold by subscription at $7.00,

FOR 30 CENTS!—FOR 30 CENTS!—ABSOLUTELY ONLY 30 CENTS!

and absolutely a proposition such as has never been made in the history of book publishing. The two splendid volumes of Grant's Memoirs, of which 650,000 copies have been already sold—not a cheap edition, but the best—for 30 cents; provided you send your subscription of $1.00 to the **AMERICAN ANALYST** one year, and also a subscription of $3.00 for the **COSMOPOLITAN MAGAZINE,** the brightest and cheapest of the great illustrated monthlies, itself equal to the best $4.00 magazine.

The **COSMOPOLITAN** is enabled to make this offer because of **the purchase of 600,000 volumes at a price which even publishers would deem impossible, and with the idea of running up its circulation to half a million copies.** By contract with the **COSMOPOLITAN,** and at no profit to us, we are enabled to offer our readers a share in the low price obtained through the largest purchase of books ever made in the history of the world.

If, however, you have Grant's books, our offer will permit you to take instead,

GEN. SHERMAN'S MEMOIRS, 2 Vols., sold by subscription for $5.00
GEN. SHERIDAN'S MEMOIRS, 2 Vols., sold by subscription for 6.00
GEN. McCLELLAN'S MEMOIRS, sold by subscription for . . 3.75

All of these are bound in cloth, green and gold, in uniform style with Grant's Memoirs.

Send us at once $3.00 for year's subscription to the **COSMOPOLITAN,** $1.00 for year's subscription to the **AMERICAN ANALYST,** and 30 cents for a set of Memoirs—$4.30 in all—to which add postage on the particular set of Memoirs selected.

WHY DO WE MAKE THESE GRAND OFFERS?

Simply because we want every intelligent family to keep well informed as to the popular science of this progressive era. We publish the **only popular journal on this subject—THE AMERICAN ANALYST.** Its subscription list is already very large; but we want at least **Fifty Thousand additional subscribers before January 1, 1892.** We know that, if we shall get them, we shall be able to hold most of them as permanent readers of our periodical. So at present sacrifice and at great cost, we have entered into a combination. The **COSMOPOLITAN** is the brightest and cheapest of the great illustrated monthly magazines; it gives annually 1,536 pages by the ablest writers, and over 1,200 illustrations by the ablest artists; and is just as interesting to the young boy or girl as to the oldest grey head. Now, then, we ask you to send us merely $4.30, and, on receipt of same, we will mail them to you regularly for **one year,** and will also send you making no charge for the books) a set of **GENERAL GRANT'S MEMOIRS,** or either of the other works that you may select. **NO SUCH OFFER AS THIS WAS EVER MADE BEFORE BY ANY PUBLISHER SINCE TIME BEGAN!**

UNLESS OTHERWISE DIRECTED,

we shall invariably ship the books by express, charges to be paid by the receiver. If you wish the volumes forwarded by mail, you must distinctly say so at the time when you send us your address and the Money; and you must also enclose postage to prepay the packages at the following rates: **GRANT'S MEMOIRS,** 96 ozs., 48c.; **SHERMAN'S MEMOIRS,** 92 ozs., 46c.; **SHERIDAN'S MEMOIRS,** 84 ozs., 42c.; **McCLELLAN'S MEMOIRS,** 48 ozs., 24c. The government rate for postage on books is one-half cent per ounce. The **COSMOPOLITAN** and **AMERICAN ANALYST** are sent to subscribers free of postage.

SEND ALL ORDERS ADDRESSED

THE ANALYST PUBLISHING CO.,

19 Park Place, New York.

HARTSHORN'S SELF-ACTING SHADE ROLLERS

NOTICE SCRIPT NAME OF Stewart Hartshorn ON LABEL, AND GET THE GENUINE HARTSHORN

THE New Model "HALL"



A Perfect Typewriter. Best Manifolder. Terms to Agents Liberal. Portable. Inexpensive. Writes All Languages. *Read Mr. Howell's Opinion.*

"I wish to express my very great satisfaction with the Hall typewriter. Impressions and alignment are both more perfect than any typewriter that I know, and it is simply a pleasure to use it. It is delightfully simple and manageable."

(Signed) W. D. HOWELLS.

Send for Catalogue and Specimens of work.

Address N. TYPEWRITER CO., 10 Temple Pl., BOSTON.

TO THE CONSUMER!

"PAVONIA BEER"

MANUFACTURED FROM THE

Best Grade of Imported Malt and Hops.

ENTIRELY FREE FROM THE PUNGENT TASTE OF THE ORDINARY BEERS.

It commends itself to the Consumer as a pure, wholesome and delicate Beer; can be safely used by Invalids.

Specify Export Pavonia Beer, White Label, when ordering

OTIS S. NEALE,

HOWARD STREET, BOSTON, MASS.

SWIFT'S

CHOICE

Chicago Dressed Beef

AND

MUTTON

Can be found at all times in full supply and at popular prices at the branch houses in all the larger cities and is RETAILED BY ALL FIRST-CLASS BUTCHERS.

The trade of all marketmen and meat dealers is solicited for our Wholesale Branch Houses, and the PUBLIC MAY REST ASSURED that in PURCHASING OUR MEAT from dealers they will ALWAYS RECEIVE THE BEST.

SWIFT AND COMPANY,

UNION STOCK YARDS,

CHICAGO, ILLS.

EVERY one in need of information on the subject of advertising will do well to obtain a copy of "Book for Advertisers," 368 pages, price one dollar. Mailed, postage paid, on receipt of price. Contains a careful compilation from the American Newspaper Directory of all the best papers and class journals; gives the circulation rating of every one, and a good deal of information about rates and other matters pertaining to the business of advertising. Address

ROWELL'S ADVERTISING BUREAU,
10 Spruce St., New York.

$5, $10 and $20

CONFEDERATE BILLS,

only five cents each. AGENTS WANTED.

SOUTHERN STAR, Atlanta, Ga.



Just a word with you.

TWO GOOD JOURNALS

FOR THE PRICE OF ONE.

We Offer that Popular Farm Journal,

— THE —

FARM AND FIRESIDE

TOGETHER WITH THE

AMERICAN ANALYST

Both papers one year, for only $1, the regular price for this journal alone.

To accommodate our rural subscribers, we have made such arrangements with the publishers of **Farm and Fireside** as enable us to offer that great journal **Free** for one year, to all who send the regular price for one year's subscription to this paper.

A MILLION PEOPLE

Read each and every issue of **Farm and Fireside**, a large, 16-page, 64-column journal, issued twice a month at **Philadelphia, Pa. and Springfield, Ohio.** It is the handsomest, best and most popular agricultural and home journal in the United States, leading all others in circulation and influence, with nearly **250,000 subscribers**, and is recognized by leading agriculturists as an authority on all that pertains to the farm. **Farm and Fireside** should be on every farm and at every fireside. It will amuse, interest, entertain and instruct every member of the household; is a welcome visitor in every family, gives a greater amount of reading matter, and is worth more than most journals costing several times as much. Thousands of ladies are regular subscribers because of its interesting and valuable Household department. Handsomely illustrated.

It will pay you to accept this offer at once.

Remember the **Farm and Fireside** and the **American Analyst**, both one year for only $1. Send all orders to

THE AMERICAN ANALYST,
19 PARK PLACE, N. Y.

ESTABLISHED 1823.

ALEX. YOUNG CO., Limited,

DISTILLERS OF

Y. P. M. WHISKIES.

DISTILLERY, - - - Nos. 408, 410, 412 and 414 South Street.
MALT HOUSE, - Nos. 416, 418, 420, 422 and 424 South Street.
STORE, - - - - - - - - - - No. 700 Passyunk Avenue.

PHILADELPHIA, PA.

New York Office, - 78 Wall Street.

FOR SALE BY

ACKER, MERRALL & CONDIT, and PARK & TILFORD.



ONLY PAPER OF ITS CHARACTER PUBLISHED.

It is a bright, nicely-printed weekly newspaper for women, attractively illustrated, and contains departments of interest to every member of the family. It is a CLEAN, INDEPENDENT NEWSPAPER, recording weekly interesting news of and about women.

Edited by Kate Kauffman, and a corps of brilliant writers.

It instructs, entertains, and is worth many times its subscription price, viz: $1.00 per year.

SPECIAL PREMIUM OFFERS.

Watches, jewelry, silverware, flowers, handsome lamps, photographs, beautiful arto-engravings and useful household articles of all kinds, at unheard of low prices in connection with a year's subscription to WOMANKIND. AGENTS WANTED EVERYWHERE. Special inducements to Club raisers. Send for our handsome, illustrated premium supplement, just out.

Address,
THE HOSTERMAN PUBLISHING CO.,
Springfield, Ohio.

THE ORIGINAL AND GENUINE
(WORCESTERSHIRE SAUCE).

LEA & PERRINS' SAUCE



In consequence of Imitations calculated to deceive, we call attention to the fact that each bottle of the Original and Genuine WORCESTERSHIRE SAUCE, bears our signature thus—

Lea & Perrins

Beware of Imitations; see that you get Lea & Perrins'

For sale in Bottles only (not in bulk), by Dealers in Sauces throughout the World.

JOHN DUNCAN'S SONS, NEW YORK.

THE LABORATORY.

To Inventors, Manufacturers and Applicants for Patents

The AMERICAN ANALYST may be consulted upon all matters involving theoretical or applied chemistry. Advice and opinions given. Analyses and assays made. Patents perfected and secured. Terms reasonable.

Address, AMERICAN ANALYST,
10 Park Place, N. Y.

RHEUMATISM AND NEURALGIA

are being constantly cured by Robinson's "Sura Cura," a positive antidote for all impure states of the blood. Price, $1.00, sent by mail. Send for circular.

R. W. ROBINSON & SON,
184 Greenwich St., N. Y.

GOLD MEDAL, PARIS, 1878.



W. BAKER & Co.'s
Breakfast
Cocoa

from which the excess of oil has been removed,

Is Absolutely Pure and it is Soluble.

No Chemicals

are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., DORCHESTER, MASS.

We can save you Fifty Dollars when you Build. See



A complete set of Plans to build from, simply state about price of dwelling desired. 25 cts. in stamps. Our book "Beautiful Homes," 25 cts. Our monthly book "The National Builder," 25 cts. Address

The National Builder, Adams Exp. Bldg., Chicago, Ill.

GOITRE, or THICK NECK.

I have a positive, speedy, cleanly, harmless and almost inexpensive cure. Come or write to me at 38 Arlington Court, CLEVELAND, Ohio. It is no iodine smear. Cure made permanent.

Dr. J. CASKEY.

FORTY DOLLARS FREE.

How many words can you make using only the letters in the words "Hat Identifier?" First prize, $25; second prize, $10; third prize, $5; fourth prize, one dozen "Identifiers." Send a DIME for rules governing contest and sample "Identifier" to ILLINOIS METAL CO., Royal Insurance Building, Chicago, Ill.

BLAIR'S PILLS.



Great English Remedy for GOUT, RHEUMATISM and KIDNEY COMPLAINTS.

SURE, PROMPT and EFFECTIVE.

Large Box, 34; Small, 14 Pills.

At all Druggists, and

224 WILLIAM STREET, NEW YORK.

A COLLEGE EDUCATION FREE!

In one of the oldest, most prominent Colleges in the country, ABSOLUTELY FREE. A chance of a lifetime. Do you want it? You do not need to invest a dollar. Write for particulars to one of the brightest and most original illustrated monthlies in America. Address,

BUSINESS WORLD, DETROIT, MICH.

TABASCO PEPPER SAUCE,

OR LIQUID PEPPER.

Is simply the Pulp of the Ripe Pepper Extracted by Pressure.

The seed of this Pepper was obtained from Central America, and by careful cultivation in Louisiana for many years has been so improved in strength, flavor and aroma, as to have become a new variety of Red Pepper, superior to all others. The pulp is so handled as to retain all the flavor, strength, aroma and color of the ripe fruit, and to keep unimpaired in any climate. It excites the appetite, promotes digestion, and is pronounced by connoisseurs to be the finest condiment in the world. For medicinal purposes it recommends itself by its purity, strength and diffusible form.

Manufactured by E. McILHENNY'S SON,

NEW IBERIA, LA.

For Sale by all Wholesale Grocers.

ESTABLISHED IN LONDON, 1831.

DEAN'S PATENT Ardenter Mustard



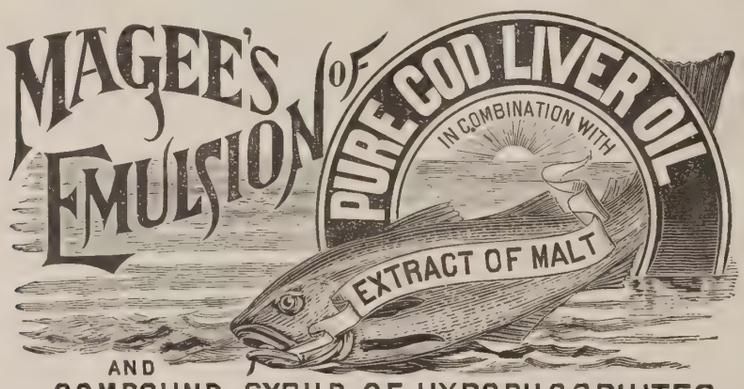
W. G. DEAN & SON,
361 & 363 WASHINGTON STREET; 84, 86, & 88
NORTH MOORE STREET, N.Y.

AMERICAN ANALYST CLUB RATES.

WE have made arrangements by which we can furnish to our readers any of the periodicals named below at a club rate, with the AMERICAN ANALYST, at a considerable saving. Should any periodical not mentioned be desired, or several of the journals, drop us a postal card and we will give you a rate promptly. For sample copies address the publishers. Terms strictly cash, in advance.

	Publishers' Price.	Our Price, including AMERICAN ANALYST, One Year.
Arthur's Home Magazine	$1.50	$2.35
Babyhood	2.00	2.50
Century Magazine	4.00	4.50
Christian Herald, N. Y.	1.50	2.00
Christian Union, N. Y.	3.00	3 50
Cosmopolitan Magazine (See our Premium Offer.)	3.00	3.25
Cottage Hearth	1.50	2.00
Current Literature	3.00	3.50
Demorest's Magazine	2 00	2 50
Family Story Paper	3.00	3 25
Farm and Fireside	.50	1.40
Fireside Companion	3.00	3.50
Forum	5.00	5.25
Frank Leslie's Illustrated Newspaper	4.00	4.50
" " Popular Monthly	3.00	3.50
Garden and Forest	4.00	4.25
Godey's Ladies' Book	2.00	2.50
Golden Days	3.00	3.50
Good Housekeeping	2.40	3.00
Harper's Bazaar	$4 00	$4 50
" Young People	2.00	2.50
" Weekly	4 00	4.25
" Magazine	4.00	4.25
Home Magazine (Mrs. Logan's)	.50	1.25
Judge	5.00	5.00
Ladies' Home Journal	1.00	1.75
Ledger, New York	2.00	2.50
Life	5.00	5.50
Lippincott's Magazine	3.00	3.25
Magazine of American History	5.00	5.00
New York Weekly	3.00	3.50
Our Day, Boston	2.50	3.25
Outing	3.00	3.50
Peterson's Magazine	2.00	2.50
Popular Science Monthly	5.00	5.25
Puck	5.00	5.00
Review of Reviews	2.00	2.75
Scientific American	3.00	3.50
Scribner's Magazine	3.00	3.25
Youth's Companion	1 85	2.50

ADDRESS THE ANALYST PUBLISHING CO., 19 Park Place, New York.



AND

COMPOUND SYRUP OF HYPOPHOSPHITES

Cures Consumption, Bronchitis, Coughs, Colds, Scrofula, and all Wasting Diseases.

It is pleasant and palatable to take as honey. Does not produce Nausea, and is easily assimilated.

Its strengthening effects are almost immediate.

It does not come up to assert itself semi-occasionally after being swallowed, as other Emulsions certainly do.

It is a Great Producer of BONE and MUSCLE, it purifies the Blood, and patients gain rapidly in weight while taking it.

It is a true Emulsion, the only one that is always ready, always alike, and that never has a thick, gummy, and greasy blob at the top to upset the patient's stomach.

It is used in all the leading hospitals.

It is prescribed by the most eminent physicians in the United States and Canada, and many assert that it is

THE BEST EMULSION IN THE MARKET.

Ask your Druggist for it, AND TAKE NO OTHER.

MAGEE EMULSION CO., Manufacturers, Lawrence Mass. Toronto, Canada.

PUBLICATIONS OF THE

ANALYST PUBLISHING CO.

THE AMERICAN ANALYST. Weekly. Every Thursday. $1 per year.

THE ROOFER AND TINNER. Monthly. 15th each month. $1 per year.

THE LEATHER MANUFACTURER. Monthly. 1st each month. $3 per year.

Reliable agents and representatives wanted everywhere on liberal terms. Address

ANALYST PUBLISHING CO.

19 PARK PLACE, NEW YORK.

GLENN'S SULPHUR SOAP.

Glenn's Sulphur Soap is the **Original** and **Best** combination of its kind, and the one now generally in use. For sale by **All Druggists.**

BEWARE OF COUNTERFEITS.

Wholesale Depot,

C. N. CRITTENTON,

115 FULTON STREET,

NEW YORK.

IF you wish to advertise anything anywhere at any time write to GEO. P. ROWELL & CO., No. 10 Spruce St., New York.

ARROWHEAD HOT SPRINGS,

CALIFORNIA.

I MOST respectfully invite physicians of the East to write to me for information concerning this famous Southern California resort. The hot mineral water mud baths, and climate are unequalled in America. Diseases of the throat, lungs, liver, stomach and kidneys, nervous and skin troubles and rheumatism, are the ailments successfully treated. The hotel contains 125 rooms, is first-class, and lighted throughout with incandescent lights. Elevation 2,000 feet. Address,

H. C. ROYER, M. D.,

Arrowhead Springs, San Bernardino Co., California.

"BILLET"

are

Carefully Selected

French Sardines,

Packed in Choicest Olive Oil.

AT ALL LEADING GROCERS.

The Old Doctor's Book of Secrets.

Tells everything! Over 400 pages, closely printed, with illustrations. Contains medical receipts and prescriptions, and much valuable information all young men should know. Sent securely wrapped in plain wrapper, postage prepaid, to any address for $1.00.

(Send for it. One receipt alone may save you many times its cost

EUREKA PUB. CO., Box 441, Chicago.

AGENTS WANTED ON SALARY

or commission, to handle the New Patent Chemical Ink Erasing Pencil. Agents making $50 per week. X318

MONROE ERASER MFG. CO., LA CROSSE, WIS.

UNIVERSITY OF ILLINOIS-URBANA
3 0112 120356636